COGNITIVE-BEHAVIORAL THERAPY EFFICACY VIA VIDEOCONFERENCING FOR SOCIAL (PUBLIC SPEAKING) ANXIETY DISORDER: SINGLE CASE DESIGN

by

MARIE-HÉLÈNE PELLETIER

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Department of Educational and Counselling Psychology, and Special Education;
Counselling Psychology Program

The University of British Columbia
Vancouver, Canada

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ABSTRACT

Social (public speaking) anxiety disorder is the most prevalent of all anxiety disorders, and it often impairs social and occupational functioning. Intervention studies indicate that cognitive-behavioral therapy (CBT) is an efficacious treatment for social anxiety. However, access to therapists skilled in CBT for social anxiety is often difficult. In order to respond to the problem of access, the use of videoconferencing for mental health care has developed. No published study has investigated the efficacy of CBT for social anxiety when provided via videoconferencing.

The purpose of this study, therefore, was to determine the efficacy of CBT for social anxiety when provided via videoconferencing. A single-case replication design was employed that included a baseline period of 3 weeks, followed by 12 weeks of treatment, 1-week post-intervention period, and 3-month follow-up. Five participants completed treatment. It was hypothesized that participants would reduce their social anxiety symptoms (i.e., decrease anxiety during speech task, increase duration of speech task, and decrease public speaking anxiety) assessed on standardized measures of social anxiety. Exploratory analyses of changes in self-monitored social anxiety, negative cognitions (public self-consciousness, fear of negative evaluation, internal attributions), working alliance, client satisfaction with treatment, and client comfort with videoconferencing were also performed. Analyses included visual and statistical significance, as well as clinical significance (i.e., endstate functioning, social phobia diagnostic status).

The results indicated that two of three hypotheses were supported (i.e., anxiety during speech task reduced and duration of speech task increased over time). At 3-month

follow-up, treatment gains were maintained or improved further; 3 participants no longer met the DSM-IV-TR criteria for social anxiety disorder, and 4 participants met criteria for moderate or high level of endstate functioning (i.e., clinical significance). Exploratory analyses revealed that self-monitored social anxiety decreased for 3 of 5 participants, and that a decrease in negative cognitions was associated with a decrease in social anxiety. Working alliance ratings remained high throughout treatment. Satisfaction with videoconferencing decreased over treatment for the participant who did not improve. Generally, comfort with videoconferencing increased over time. The results offer preliminary support for further research about the efficacy of the intervention.

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CHAPTER I - INTRODUCTION

Studies reveal that social anxiety disorder has the highest lifetime prevalence of all anxiety disorders, ranging from 3% to 13% (APA, 2000). This disorder has an early age of onset, which makes it a chronic and debilitating disorder (Turk, Fresco, & Heimberg, 1999), and often impairs people's social and occupational lives to a significant degree (Hope & Heimberg, 1993; Stein, Walker, & Forde, 1996). Social anxiety involves a number of cognitive, behavioural, and physical signs and symptoms, including the fear of being humiliated or judged negatively in social situations, blushing, sweating, trembling, and the avoidance of potential negative evaluation situations (APA, 2000). The most prevalent social fear is public speaking anxiety that is specific to situations where an individual speaks in front of an audience. Given the high prevalence of social anxiety disorder, it is likely that a significant number of people find access to services or interventions prohibitive due to their geographical isolation. Therefore, the purpose of this study is to examine the efficacy of treatment for social anxiety disorder delivered via videoconferencing, a promising medium for increasing access to treatment.

Cognitive theory, based on the work of Beck and Emery (1985), suggests that individuals with social anxiety perceive a threat in social situations. They worry about being criticized or rejected by others, and as a consequence they tend to fear negative evaluation, to be preoccupied with how they appear socially (public self-consciousness), and to attribute consequences of aversive social events to internal causes. Thus, cognitions are posited to play a primary role in the maintenance of social fears, avoidance behaviors, and physical anxiety symptoms.

Cognitive-behavior therapy (CBT) aims at decreasing anxiety symptoms by challenging the biased thinking of socially anxious individuals, using cognitive restructuring and exposure to feared situations (Heimberg, 1991, 2001). Cognitive restructuring involves reducing the frequency and strength of the belief in negative thoughts. This is achieved, for example, through the development of more realistic interpretations of how the audience sees the individual. Exposure to feared situations is used to confront the individual with information that disconfirms his or her negative assumptions about social situations. The combination of cognitive restructuring and exposure has received empirical support, and is recommended as an effective and empirically supported treatment for social anxiety (Chambless et al., 1996; Shear & Beidel, 1998). Moreover, there is evidence that treatment gains are maintained and sometimes increase at 3-month follow-up assessments (Taylor, 1996).

However, CBT is not always widely available. Most Canadian hospitals that have an anxiety disorder unit are located in urban areas (Swinson, Cox, Kerr, & Kuch, 1992). Furthermore, access to therapists skilled in CBT for social anxiety disorder often is not possible (Shear & Beidel, 1998). Ballenger and colleagues (1998) have recommended that the effectiveness of CBT in settings other than research centers should be determined as a way of serving a broader clientele.

Telehealth and telemedicine (or the use of communication technology for health care at a distance) have been proposed as a means of responding to the problem of underserved populations, lack of evenly distributed resources, and burgeoning health care costs (Darkins & Cary, 2000; Nickelson, 1998; Stamm, 1998). Because videoconferencing transmits both verbal and non-verbal information, some experts are of

the opinion that it is the technology of choice for the delivery of psychotherapy from a distance (Maheu & Gordon, 1997). Specifically, videoconferencing refers to a technology in which participants can both see and hear each other when communicating, which makes it analogous to face-to-face psychotherapy. Therefore, in the present study the efficacy of CBT provided via videoconferencing was examined.

A definition for the terms efficacy and effectiveness appears warranted. The concept of efficacy traditionally refers to the outcome of controlled laboratory studies, whereas effectiveness refers to treatment evaluation conducted in broader mental health service systems (Clarke, 1995). Efficacy tends to involve laboratory studies of manualized treatments or specific interventions focusing on a disorder of interest. Effectiveness, on the other hand, has been associated with more flexible treatment offered in clinical settings, where no exclusionary criteria are used. Efficacy studies therefore maximize internal validity (i.e., less likelihood of attribution from other variables), whereas effectiveness studies maximize external validity. In a program of research, efficacy needs to be supported prior to establishing effectiveness in order to relate outcome to treatment with fewer possibilities being due to other variables. Because the present study involves a manualized treatment offered to a specific population, it is considered an efficacy study. In the present text, efficacy and effectiveness are used selectively when clearly referring to laboratory and field studies respectively.

Several studies found encouraging results for the effectiveness (i.e., effectiveness refers to therapy as practiced in a clinical setting) of psychotherapy delivered via videoconferencing (for a review, see Baer, Elford, & Coyle, 1997), justifying further research. These studies mainly included adult clients suffering from a range of problems

(e.g., family issues, psychiatric disorders), who received a variety of psychological treatments (e.g., CBT, psychodynamic). Clients were seen for an average of eight sessions and dimensions of treatment that were assessed included feasibility (e.g., Dwyer, 1973), users' views (e.g., Dongier, Tempier, Lalinec-Michaud, & Meunier, 1986), and more recently effectiveness of psychotherapy and the establishment of a working alliance (Day & Schneider, in press).

Investigations of psychotherapy via videoconferencing reveal a number of methodological problems that need to be addressed. For example, (a) efficacy has not been assessed in a manner that is clinically meaningful for targeted problems; (b) anecdotal information and the absence of control conditions have limited our ability to draw inferences; (c) the omission of statistical or clinical significance analyses pose limitations to clinical knowledge; and (d) many studies report an assessment of satisfaction *or* efficacy, instead of both, or omit the examination of working alliance and comfort with videoconferencing. Moreover, to my knowledge, no published study has examined the efficacy of CBT via videoconferencing for social anxiety disorder or more specifically public speaking anxiety.

Because the use of videoconferencing in mental health practice is preceding research on its efficacy, "there is an urgent need for the evaluation of telehealth services to assess the efficacy of care delivery using the various technologies" (British Columbia Health Industry Development Office, 1999, p. 17). Despite the burgeoning use of videoconferencing, interventions provided via videoconferencing need to be carefully evaluated before being made available to the public (APA, 1998; Capner, 2000; Jerome et al., 2000). Moreover, professional organizations have published guidelines for services

provided via videoconferencing (e.g., Ethics Committee of the American Psychological Association, 1997), yet there is a need for empirical data to support and develop treatment recommendations.

The transfer of CBT from face-to-face to a videoconferencing medium for social anxiety appears possible both for cognitive restructuring and exposure. Cognitive restructuring is implemented verbally, which is transferable to videoconferencing. In-session exposure simulations can also be transferable by having an audience present at either the clinician's or the client's location. Furthermore, the visual component of videoconferencing potentially makes this medium particularly effective for challenging the belief that the client's anxiety is visible to others, as opposed to telecommunication such as telephone or email.

This study addresses the methodological limitations of previous investigations of psychotherapy via videoconferencing in several ways. The efficacy of CBT was examined for individuals with public speaking anxiety, which is a circumscribed form of the most prevalent of anxiety disorders (social anxiety disorder). In addition, standardized measures are used in a single-case design with replications across participants. This design was quasi-experimental, which suggests possible causal relations between treatment and therapeutic change (although some factors represent a threat to internal validity). Intensive assessment over time inherent to single-case designs (Barlow & Hersen, 1984) retains information on how individuals change, avoiding aggregation that may hide information that is useful, especially in the context where treatment via videoconferencing is relatively new. Visual analysis, as well, statistical and clinical significance are reported, providing meaningful conclusions. Finally, the working

alliance, and satisfaction and comfort with the medium are examined because they have been linked to treatment efficacy.

In summary, the purpose of the present study was to test the efficacy of CBT via videoconferencing for socially anxious individuals using a single-case design. The research question focused on the extent to which participants suffering from public speaking anxiety would demonstrate improvement in social anxiety symptoms following treatment implementation, compared with a pre-treatment baseline, and to what extent they would maintain these gains at a 3-month follow-up. In order to further inform the primary analysis and better understand the results, changes in cognitions, working alliance, satisfaction, and comfort were explored.

CHAPTER II – REVIEW OF THE LITERATURE

Individuals who suffer from social anxiety disorder represent the largest proportion of anxiety disorders. CBT has received empirical support for treating this disorder, and is the recommended non-pharmacological treatment of choice (Shear & Beidel, 1998). However, specialized services are not always easily accessible. Access may be improved by providing CBT via videoconferencing. The use of this alternative is new, and there is a dearth of research on the efficacy of CBT via videoconferencing for socially anxious individuals. In order to pursue this problem, first I define public speaking anxiety and explore the theory and treatment used for this problem. Then, due to the absence of empirical data regarding the efficacy of CBT via videoconferencing specifically for social anxiety disorder, I review psychological treatment studies via videoconferencing.

Social Anxiety Disorder: Public Speaking Anxiety

Definitions. Several terms are used in the field of social anxiety, such as public speaking anxiety, social anxiety disorder, social phobia, avoidant personality disorder, speech anxiety, communication apprehension, and shyness. In order to define and situate the term public speaking anxiety, characteristics associated with each term are provided.

Public speaking anxiety has been defined as a circumscribed form of social anxiety disorder (Heimberg, Hope, Dodge, & Becker, 1990). Social anxiety disorder is an emerging term used to describe social phobia that has been adopted in recent publications (e.g., Ballenger et al., 1998; Heimberg, Liebowitz, Hope, & Schneier, 1995; Hope, Heimberg, Juster, & Turk, 2000). Researchers consider social anxiety disorder a more accurate term to describe social phobia, because it may lead to greater recognition of this

disorder (Liebowitz, Heimberg, & Stein, 2000). Therefore, I use the term social anxiety disorder in this text. However, when referring to the specific DSM-IV-TR diagnosis, to be consistent, I use the term social phobia.

According to the fourth edition text revision of the DSM-IV-TR (APA, 2000), social phobia (i.e., social anxiety disorder) is an Axis I disorder characterized by marked and persistent fear of social situations; for example, in social gatherings, meeting new people, and formal performance situations. Socially anxious individuals may present with "specific" or "generalized" subtypes. If the individual fears only one specific type of situation (e.g., public speaking), the social anxiety is said to be specific, or circumscribed. Individuals with generalized social anxiety fear a number of different social situations. The DSM-IV-TR also includes the Axis II avoidant personality disorder, which is used for individuals who experience a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluations in general. This diagnosis can be added to the Axis I social anxiety disorder. Some authors have conceptualized it as a more severe form of fear of social evaluation (Rapee & Heimberg, 1997).

Public speaking, as a circumscribed form of social anxiety disorder, is the most prevalent form of social anxiety (Ballenger et al., 1998). Public speaking anxiety includes situations such as giving a formal presentation to a large audience as well as speaking to a small group (e.g., presenting a project in front of co-workers). Other circumscribed forms of social anxiety disorder include fear of writing, drinking, and eating in front of others. An individual with the generalized subtype of social anxiety disorder almost always suffers from public speaking, and it is often his/her most common social fear (DSM-IV-TR; APA, 2000). Generalized and circumscribed forms differ in the number of different

social situations feared, but they share the same fear of evaluation and scrutiny by others (Heimberg et al., 1990). Except for the specificity of public speaking situations, public speaking anxiety shares the same features as other forms of social anxiety.

Other terms such as speech anxiety, communication apprehension, and shyness are sometimes used to describe public speaking anxiety. Speech anxiety is an acceptable synonym, as it refers to maladaptive cognitive, physiological, and behavioral reactions to situations involving speaking to an audience (Fremouw & Breitenstein, 1990). Shyness is a general term that refers to more than just public speaking anxiety, but to a lesser level (e.g., involving less functional impairment) than social anxiety disorder. It is mainly used in psychology (e.g., Zimbardo, 1977). Communication apprehension is also a general term that refers to many social settings, not just public speaking, and is mainly used in communication research (e.g., McCroskey, 1984).

In summary, social anxiety disorder (formerly social phobia) includes generalized and circumscribed forms. Public speaking anxiety (or speech anxiety) is the most common circumscribed form. Shyness and communication apprehension are general social anxiety terms of a less severe level than generalized and circumscribed social anxiety disorders. Individuals with severe public speaking anxiety are usually included in studies that examine social anxiety disorder because they meet the diagnostic criteria (e.g., Heimberg, Becker, Goldfinger, & Vermilyea, 1985; Heimberg et al., 1990). Therefore, in the following section, I review the literature on social anxiety disorder.

Clinical presentation. Social anxiety represents a significant mental health problem that often impairs people's social and occupational functioning (Hope & Heimberg, 1993; Stein et al., 1996). This disorder has the highest lifetime prevalence of

all anxiety disorders, ranging from 3% to 13% (DSM-IV-TR; APA, 2000). Social anxiety disorder is more commonly diagnosed among women than men, but men and women are relatively equally represented in seeking treatment (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). It has a bimodal early age of onset (i.e., before 5 years old, and around 13 years old), and has lifetime consequences, which makes it a chronic and debilitating disorder (see Craske, 1999; Turk et al., 1999).

Social anxiety disorder involves cognitive, behavioral, and physical symptoms. Cognitive processes include the assumption that one is not able to live up to the expectations of self or others, and therefore an individual fears being humiliated, judged negatively, and rejected (Beck & Emery, 1985; Clark & Wells, 1995). This fear may be higher when exposed to specific persons such as strangers, individuals of the opposite sex, or authority figures. Behavioral symptoms refer to various behaviors aimed at avoiding potential negative evaluation, and may include overt avoidance (e.g., not attending social gatherings, not speaking at meetings) or subtle avoidance, such as avoiding eye contact and reducing verbal output or voice tone (Greist, Kobak, Jefferson, Katzelnick, & Chene, 1995). Reported physical symptoms tend to involve those visible to others, such as blushing, stammering, sweating, and trembling, in addition to other symptoms typically associated with anxiety (Reich, Noyes, & Yates, 1988). In severe cases, symptoms may meet the criteria for a panic attack (DSM-IV-TR; APA, 2000). The cognitive aspect of social anxiety disorder has been recognized by many authors as having a central role in the development and maintenance of this disorder (Arnkoff & Glass, 1989; Clark & Wells, 1995; Stopa & Clark, 1993).

In addition, social anxiety is frequently associated with a high rate of comorbidity with other disorders such as depression, panic disorder, agoraphobia, generalized anxiety, and drug and alcohol abuse (Heckelman & Schneier, 1995). Social anxiety often precedes the onset of other disorders, and follows a chronic and static course (Rapee, 1995). The high rate of comorbidity and chronic nature of social anxiety disorder suggest that the absence of treatment can result in many years of disability (Clark & Wells, 1995). Given the high prevalence of social anxiety disorder and its impact on an individual's functioning, it is important that treatment not be limited by geographical location. In the next section, I review the most prevalent theoretical model that explains social anxiety.

Cognitive theory. One of the most often used psychosocial explanatory models of social anxiety disorder is a cognitive theory, based on the work of Beck and Emery (Beck & Emery, 1985; Clark & Wells, 1995; Rapee & Heimberg, 1997), which suggests that people who suffer from social anxiety process social information in a biased way. For socially anxious individuals, social situations generate danger cognitions. They worry about being criticized or rejected by others (i.e., fear of negative evaluation). As a consequence, people with social anxiety devote high levels of attention to their social presentation (i.e., public self-consciousness). They are hypervigilant to cues that suggest the possibility of negative evaluation by others, which makes them feel vulnerable and act in a constantly vigilant way. Their perception of their own social performance (reflected in negative self-talk) is distorted and self-critical (Clark & Wells, 1995), and they overestimate the degree to which their anxiety is visible to others (Lucock & Salkovskis, 1988; Stopa & Clark, 1993). Moreover, they estimate the likelihood and severity of the consequences of aversive social events as very high (e.g., fear of being

rejected) and they attribute the consequences to internal causes (i.e., internal attributions). The cognitive (i.e., self-talk, fears, attributions), behavioral (i.e., avoidance), and physiological components (e.g., sweating, accelerated heart rate) of their anxiety feed back and increase their anxiety (Rapee & Heimberg, 1997).

This cycle starts in social situations where a threat is perceived. It leads to cognitive, behavioral, and physical responses to the challenge. However, this perception of danger is based on an assumption rather than an actual external threat, resulting in a dysfunctional response. Thus, cognitive activity is construed to play a primary role in the maintenance of social fears, avoidance behaviors, and physical anxiety symptoms, and involves cognitive, behavioral, and physiological components, which has important implications for determining treatment efficacy.

Thus, based on Beck and Emery's (1985) cognitive theory, CBT should reduce negative self-statements and increase positive self-statements, and reduce fear of negative evaluation, public self-consciousness, and internal attributions. In order to determine the efficacy of CBT in the present study, these cognitive variables were examined because of their key role in symptoms change in the cognitive theory.

Cognitive-behavioral treatment (CBT). Cognitive theory has lead to the development of a treatment for social anxiety that involves the integration of cognitive restructuring and exposure techniques (Heimberg, 1991, 2001), and is commonly known as CBT. Other types of treatment have been used for social anxiety, including Morita therapy, dynamically oriented supportive psychotherapy, and various pharmacotherapies (see Kunovac & Stein, 1999). CBT and pharmacotherapies have received the strongest evidence of their efficacy for social anxiety. Pharmacotherapies, although effective at

least in the short-term, can involve side effects and have addiction potential (Fedoroff & Taylor, 2001). Cognitive restructuring combined with exposure treatment (i.e., CBT) has been the most frequently used and researched non-pharmacological treatment (Ballenger et al., 1998; Fedoroff & Taylor, 2001; Hope & Heimberg, 1993) and is considered the standard in clinical practice (Shear & Beidel, 1998).

The goal of CBT is to decrease anxious symptoms by modifying cognitions to be more similar to those of non-anxious persons. The cognitive component involves reducing the frequency and strength of the belief in negative thoughts (Heimberg, 1991, 2001). This is achieved, for example, by developing more realistic representations of how the audience sees the individual. It also includes specific interventions aimed at directing attention away from the mental representation of how an individual appears, to other parts of the social interaction.

More precisely, cognitive restructuring challenges the biased thinking and perceptions of individuals with social anxiety. It targets the fear of negative evaluation (Marshall, 1994), a tendency to evaluate the self overly negatively (Stopa & Clark, 1993), excessive internal attributions of failure (Hope, Gansler, & Heimberg, 1989), and conditional beliefs regarding social evaluation (Clark & Wells, 1995). Cognitive restructuring has been shown to decrease negative cognitions (Taylor, Woody, Koch, McLean, et al., 1997).

The exposure component includes in-session simulated exposure and homework assignments composed of between-session in-vivo exposure to feared situations. Individuals are encouraged to identify subtle avoidance behaviors, and are asked not to use them. Video and audio feedback have been used to allow individuals to compare their

constructed image (e.g., visibility of anxiety symptoms to other people) with how they actually appear, which tends to be better than they expect (Clark, 1997; Clark & Wells, 1995).

Exposure confronts the individual with information that is disconfirming of his or her negative assumptions (Foa & McNally, 1996), and changes the avoidance pattern that may otherwise persist. As is the case for anxiety disorders in general, social anxiety is responsive to exposure (Heimberg & Barlow, 1991). Exposure confronts social fears and biased processing of social information in a rather convincing way. To illustrate, if social interaction is associated with rejection and danger, then graduated exposure will activate this fear structure and provide information that is incompatible with the faulty associations. It also disconfirms the belief that the experience of anxiety symptoms will continue to grow if the situation persists, and that disastrous consequences will follow. Exposure has been shown to achieve cognitive change (e.g., Scholing & Emmelkamp, 1993), which is theorized to have consequences for cognitive, behavioral, and physiological components of social anxiety.

Cognitive-behavioral treatment efficacy. The efficacy of CBT for social anxiety disorder has been demonstrated in several studies (see Shear & Beidel, 1998). A consensus statement from the International Consensus Group on depression and anxiety has recognized the efficacy of CBT for social anxiety disorder (Ballenger et al., 1998). Moreover, the Task Force on Promotion and Dissemination of Psychological Procedures of the American Psychological Association has recognized Cognitive Behavioral Group Therapy (Heimberg, 1991, 2001) as an empirically supported treatment for social anxiety disorder (Chambless et al., 1996). Heimberg's (1991, 2001) Cognitive Behavioral Group

Therapy consists of the combination of exposure and cognitive restructuring provided in a group format. The Cognitive Behavioral Group Therapy involves discussion about the cognitive-behavioral explanation of social anxiety, training in cognitive restructuring activities through the use of structured exercises, simulated in-session exposure to anxiety-provoking situations, use of cognitive restructuring before and after exposures, and homework assignments for in vivo exposure and associated cognitive restructuring activities (Heimberg & Juster, 1995). This combination of cognitive restructuring and exposure has been developed into a treatment manual (Heimberg, 1991, 2001), which makes standard administration of core elements of treatment more consistent, increasing treatment integrity in efficacy and effectiveness studies. In the present study, Heimberg's (1991, 2001) manualized treatment formed the basis for CBT via videoconferencing.

Three reviews (one narrative review and two meta-analyses) of the efficacy of CBT for social anxiety disorder are examined below. Heimberg and Juster (1995) conducted a narrative review of 38 outcome studies published between 1976 and 1995 using CBT for social anxiety disorder. The authors focused on studies of CBT for social anxiety disorder (or social phobia) as defined in the DSM-III or the revised third edition (DSM-III-R; American Psychiatric Association, 1987), and on studies of individuals who would "probably have met the criteria for social phobia had they been applied" (Heimberg & Juster, 1995, p. 261). However, specific inclusion/exclusion criteria were not specified.

Outcome study results were based on the assessment of social anxiety symptomatology (e.g., behavior tests, self-reports about social anxiety and public speaking anxiety, self-reports of avoidance, clinicians' ratings) and beliefs (e.g., fear of

negative evaluation, attributions for negative outcomes). The number of participants in each study varied from 1 to 133, with a mean of 42.89 (*SD* = 29.09). Characteristics of patient samples in the studies included an average age of 29 years at the time of the study, and average mean duration of social anxiety was 15.5 years. Fifty-two percent of the participants were female, 43% of the participants were married, and 69% were employed. The treatments examined were performed in group (50%), individual (37%), and mixed (13%) formats, and the mean number of sessions was 11 [*SD* = 4.82; studies using Heimberg's (1991, 2001) manual involved 12 sessions]. Therapists' training varied (when the information was provided), including master and doctoral students with various levels of experience, Ph.D. level psychologists, and physicians. Fifty-three percent of the studies included control conditions (e.g., baseline, placebo, waiting list).

Primary categories of CBT treatment included social skills training, relaxation techniques, exposure-based methods, and multicomponent cognitive-behavioral interventions. Social skills training received limited support mainly due to the small number of studies as well as methodological flaws (e.g., absence of control conditions). Studies involving relaxation techniques received some support for their efficacy when the strategies were paired with exposure techniques. Heimberg and Juster (1995) noted that each study that included exposure reported significant effects. They also reported that the addition of cognitive techniques improved the treatment on some occasions. Follow-up assessments for social anxiety disorder conducted within one year after the end of CBT indicated that individuals tend to maintain their gains. The authors' recommendations for future research included the examination of "the parameters of effective treatment" (p.

305), which they did not clarify further. Providing CBT via videoconferencing may help towards this endeavor.

Heimberg and Juster's (1995) review involved studies where statistical analyses were used, and mainly compared groups of individuals (some studies reported individual data). However, average gains can hide the course of change of each individual's symptoms. Although the use of statistics is consistent with group designs, results may have been more clinically meaningful if they were described in terms of individual clinical significance (Jacobson & Truax, 1991). The use of clinically meaningful indicators of individual clinical improvement following treatment is needed both for researchers and clinicians in order to gain a better understanding of the impact of treatment (see Allen, Hunter, & Donohue, 1989; Bobes, 1998). In addition, Heimberg and Juster's (1995) review revealed that most outcome studies assessed efficacy with measures targeted at social anxiety symptomatology manifest in a laboratory environment, such as behavior tests, self-reports, and clinician's ratings. However, a laboratory environment is different from a naturalistic environment. Therefore, self-monitoring ratings completed in naturally occurring social encounters may provide more valid information about everyday anxiety levels and contribute to the external validity of the results.

Taylor's (1996) meta-analysis involved the comparison of 42 CBT studies (published and unpublished) of social anxiety disorder conducted between 1982 and 1995. Meta-analyses were based on the effect sizes (Cohen's *d*; Cohen, 1988) derived from the social phobia subscale of the Fear Questionnaire (Marks & Mathews, 1979), the Social Phobia and Anxiety Inventory (Turner, Beidel, Dancu, & Stanley 1989), the Social

Phobia Scale and the Social Interaction Anxiety Scale (Mattick, Peters, & Clarke, 1989). This choice was based on the fact that these measures were more sensitive to change, and were used in most studies. Taylor (1996) found that all conditions (placebo, $d = 0.481$; exposure, $d = 0.817$; cognitive restructuring, $d = 0.629$; combination of exposure and cognitive restructuring, $d = 1.062$; and social skills training, $d = 0.646$) yielded significantly larger effect sizes than wait-list controls ($d = -0.127$). Two types of placebo (pill placebo and attention placebo) produced similar mean effect sizes, and so they were combined. Only the combination of exposure and cognitive restructuring yielded a statistically significant larger effect size than placebo conditions, supporting the use of this combination for treating social anxiety disorder. Effect sizes tended to increase from post-treatment to 3-month follow-up for all active treatment conditions (all except placebo and waiting list conditions). Longer follow-ups were not examined due to their insufficient number.

Taylor's (1996) meta-analysis included several elements that have been associated with well-conducted meta-analyses. The analysis included studies selected with clear inclusion/exclusion criteria, as well as both published and unpublished data, taking into account the "file drawer" problem. This method avoided biased retrieval of results, and provided a test of the relative efficacy of a variety of treatments. Another indicator of the quality of the meta-analysis is that the reported effect sizes are comparable to those derived from direct comparison of groups that have been randomly assigned to conditions (e.g., Taylor, Woody, Koch, et al., 1997). Therefore, the results of this meta-analysis seem to be a good indicator of certain aspects of treatment for social anxiety disorder. However, meta-analyses can only provide information that has been

gathered in a sufficient number of studies. Some information is inevitably left out (e.g., comparisons of generalized and circumscribed phobia). No data appear to come from a naturalistic environment (e.g., self-monitoring). Finally, meta-analyses do not provide clinically meaningful details regarding the individual levels of functioning and symptomatology. However, effect sizes do provide a more meaningful interpretation of statistical analyses than mean comparisons.

Another recent meta-analysis was conducted on CBT and pharmacological treatments for social anxiety disorder. Fedoroff and Taylor's (2001) meta-analysis involved the comparison of 108 CBT and pharmacological trials (published and unpublished) of social anxiety disorder conducted between 1984 and 1999. Suitable trials had to include four or more participants to be part of the meta-analysis. Treatment conditions (i.e., CBT and pharmacological) did not differ in terms of age of participants at the time of treatment, duration of social anxiety disorder, or percentage of participants diagnosed with generalized social anxiety disorder. Although the proportion of men and women differed in various treatment conditions, gender did not appear to influence responses to treatment (percentage of women was unrelated to effect size). There were no differences between single and married participants in terms of their response to treatment.

The meta-analysis was based on the effect sizes (Cohen's *d*; Cohen, 1988) derived from self-report social phobia scales and observer-rated global severity of social phobia. Fedoroff and Taylor found that on self-report scales, the most effective treatments were benzodiazepines ($d = 2.095$) and serotonine reuptake inhibitors ($d = 1.697$). On observer-rated measures of social phobia, all treatment conditions (i.e., benzodiazepines, $d =$

3.150; serotonine reuptake inhibitors, $d = 1.540$; monoamine oxidase inhibitors, $d = 1.235$; and exposure combined with cognitive restructuring, $d = 1.804$) were more effective than the control condition, pill placebo. Only a few studies met the inclusion criteria for follow-up analyses (pharmacotherapies were not included because an insufficient number of drug studies included follow-up data). Results indicated that psychological therapies' treatment gains were maintained at follow-up (mean follow-up duration per treatment conditions varied between 1.6 and 6.0 months). Fedoroff and Taylor (2001) reported that a correlation between publication year and effect size for psychological therapies was nonsignificant, which suggests that their efficacy has not changed between 1984 and 1999.

Similar to Taylor's (1996) meta-analysis, Fedoroff and Taylor's (2001) meta-analysis included elements that are associated with well-conducted meta-analysis (e.g., clearly defined inclusion/exclusion criteria). However, some information was not available for examination because studies have not been designed in a way that incorporated long-term follow-up of pharmacotherapy and data collected in a naturalistic environment.

In summary, the results for the narrative review (Heimberg & Juster, 1995) are broadly consistent with results of meta-analyses (Fedoroff & Taylor, 2001; Taylor, 1996). Pharmacotherapy appears to be most effective, but its efficacy over an extended time period has been difficult to assess due to a small number of studies. Moreover, it is not known whether treatment effects continue when medications are withdrawn. The efficacy of cognitive restructuring and exposure (i.e., CBT) has received empirical support for the treatment of social anxiety disorder, and effect sizes have been stable over the past 15

years. Of note, treatment gains are maintained and sometimes increase at 3-month follow-up.

The three reviews have implications for social anxiety treatment research. First, 12-session CBT is considered best practice for men and women suffering from social anxiety. Follow-up assessments conducted within one year after the end of CBT indicated that gains were maintained or improved further. Studies did not find gender differences in response to treatment. However, Heimberg (1991, 2001) recommended mixing male and female therapists whenever possible, as socially anxious individuals are sometimes more anxious in the presence of the opposite sex. Second, mainly group designs were reviewed, or trials that involved at least four participants per trial, limiting our understanding of individual change. Third, the outcome variables that were used to demonstrate CBT efficacy were social anxiety symptomatology (e.g., behavior tests, self-reports about social anxiety and public speaking anxiety, clinicians' ratings). In a few studies, changes in cognitions (e.g., positive and negative self-statements, fear of negative evaluation, public self-consciousness, and internal attributions) were also reported.

Based on the results of these reviews, in the present study, a single-case design was employed to examine individual change. I expected that social anxiety symptomatology (e.g., anxiety during speech task and duration of speech, public speaking anxiety) would decrease following CBT (12 sessions) for both men and women, and that these changes would be maintained at follow-up (3 months). Cognitions such as public self-consciousness, fear of negative evaluation, and internal attributions were used as indicators of change in cognitions associated with changes in symptoms of social anxiety.

Changes in anxiety levels in the naturalistic environment were not reported in the narrative review or meta-analyses. Although the psychometric properties of self-monitoring of social anxiety have received little attention, self-monitoring diary forms have been used and recommended in assessment research (McNeil, Ries, & Turk, 1995). In order to obtain the clients' reaction in their own naturalistic environment and maintain the realism of the stimulus situation, Heimberg et al. (1990) used self-monitoring forms to record anxiety levels, and Taylor, Woody, Koch, et al. (1997) used self-monitoring forms to record the mean weekly frequency and duration of social encounters. Both self-monitoring strategies presented challenges. Heimberg et al.'s (1990) self-monitoring data were not used in their analyses due to too much missing data. Because socially anxious individuals tend to avoid social situations, it is understandable that they will not have regular social encounters, yielding an insufficient number of data points for within-person analysis. Taylor, Woody, Koch, et al. (1997) approached the problem by having participants record the frequency and duration of social encounters. However, their intention was to compare mean weekly frequency and mean duration per week of social contacts during treatment of two forms of treatment, as opposed to the changes observed over time. Moreover, these data did not provide specific information regarding participants' anxiety in those situations.

In the present study, in order to gather data on social anxiety in the client's naturalistic environment, participants used daily diaries to record their anxiety in naturally occurring social experiences. For days when there was no social encounter, participants rated their expected social anxiety. Expected ratings corresponded to how

anxious one believed he or she would be in a given social situation. Because of the lack of empirical support for this method, these data were examined for exploratory purposes.

Group versus individual treatment. Both group and individual CBT for social anxiety have shown to be effective. In an unpublished conference presentation, Lucas and Telch (as cited in Heimberg & Juster, 1995) examined an individually administered adaptation of cognitive-behavioral group therapy (CBGT), replicating a study by Heimberg et al. (1990). They compared a group and individual 12-session treatment with a total of 53 participants, and reported that "group treatment did not lead to significantly better outcomes than did individual treatment" (p. 287), with 61% of group treatment and 50% of individual treatment achieving clinically significant change on a conservative measure of reliable change (specific details are not provided in Heimberg & Juster, 1995). Scholing and Emmelkamp (1993) made the same observation, concluding that "allocation of patients to group or individual treatment should be made on clinical rather than on empirical grounds" (p. 680). Finally, in their recent meta-analysis, Fedoroff and Taylor (2001) found that although the majority of treatments for social anxiety disorder were provided in groups (71%), effect size confidence intervals of group treatment and individual treatment overlapped, leading them to pool the two types of treatment formats for data analysis.

When compared with individual treatment, a group format is more cost-effective, and has the benefit of exposure to other people during treatment. In contrast, individual treatment allows the therapist to focus on the client's situation in a more idiosyncratic manner. Group treatment assumes not only that people have access to treatment, but also that a sufficient number of clients are seeking treatment at the same time. If the purpose

of using videoconferencing is to provide CBT to isolated people, it appears that providing individual treatment is the first avenue to explore, and was used in the present study.

Mediators and moderators of treatment. The study of potential mediators (i.e., generative mechanism through which the independent variable influences the dependent variable) and moderators (i.e., variables that are predictive of treatment outcome and that affect the degree of association between predictor and criterion variable) of change in anxiety symptoms following social anxiety disorder treatment has yielded mixed findings (for a review, see Hofmann, 2000). Hofmann reviewed the literature focusing on three mediators (negative cognitions, perceived self-efficacy, and perceived emotional control) and two moderators (generalized subtype and avoidant personality disorder) of treatment for social anxiety, and concluded that the results were unclear. Because the literature is inconclusive at this point and because videoconferencing represents a new context for CBT for social anxiety disorder, mediators and moderators were not examined in the present study. Although the working alliance has not been systematically assessed as a mediator of the relationship between negative cognitions and public speaking anxiety, in the present study this potential mediator was examined in an exploratory manner.

Working alliance. A good working relationship is essential to any psychotherapy, including CBT (Beck, Rush, Shaw, & Emery, 1979). Although the working alliance has a less predominant position in CBT research, theory and research suggest that it is related to outcome (Horvath & Symonds, 1991; Kazdin, 1986; Martin, Garske, & Davis, 2000; Orlinsky, Grawe, & Parks, 1994). Moreover, Alford and Beck (1997) assert that the learning that occurs in CBT is a reflection, in part, of the working alliance (i.e., collaborative empiricism, Robins & Hayes, 1993).

The working alliance is a pantheoretic construct that "substitutes the idea [that the relationship is therapeutic in itself] for the belief that the working alliance makes it possible for the patient to accept and follow the treatment faithfully" (Bordin, p. 2, cited in Horvath & Symonds, 1991). Bordin's (1979) conceptualization involves three components: the emotional bond between the client and the clinician, the agreement on the tasks of treatment, and the agreement on the goals of treatment. The three components interact together to form the working alliance. The working alliance is based on interpersonal features that have traditionally been associated with physical co-presence. However, the concepts that define the working alliance (i.e., task, goal, and bond) do not necessarily depend on physical co-presence.

In the videoconferencing literature, Bordin's conceptualization of working alliance (1979) has been the object of at least five investigations (Bouchard et al., 2000; Ghosh, McLaren, & Watson, 1997; Glueckauf et al., 2002; Hufford, Glueckauf, & Webb, 1999; Manchanda & McLaren, 1998) using the Working Alliance Inventory (Horvath & Greenberg, 1989). For example, Hufford et al. (1999) administered the Working Alliance Inventory to dyads of mothers and adolescents where adolescents were suffering from epilepsy and consulting for behavior problems. The Working Alliance Inventory was administered at each of the six sessions provided alternatively face-to-face, audio-only, or video-only. They obtained high mean ratings (5 = *agree* to 7 = *completely agree*, on a 7-point scale), and concluded that "clients had a very positive therapeutic relationship with counselors" (p. 183). Although the authors did not report total Working Alliance Inventory scores, ratings of 5 and 7 on 36 items suggest they obtained a range of total

scores between 180 and 252. High levels of working alliance ratings were also found by Glueckauf et al. (2002).

In a single-case study (n = 1), Ghosh et al. (1997) obtained more moderate results using the same instrument administered after each of 10 sessions of eclectic therapy provided to a female-male transsexual. The researchers observed that although the participant produced task and goal scores mostly in the same range as a control group of four cases of psychotherapy (i.e., 10 session) conducted face-to-face (reported by Horvath & Marx, 1990), the bond subscale scores were lower (i.e., ranging from 44 to 62, whereas the control group's scores ranged from 58 to 82). Total scores were derived from graphic displays of subscale scores and varied between 156 and 211. The authors suspected that these lower scores were attributable to the participant's problems, although the design used did not support this supposition. Ambivalence about the quality of the working alliance may reflect people's apprehensions prior to using videoconferencing. Rohland, Saleh, Rohrer, and Romitti (2000) reported that in a sample of 200 individuals living in a rural community, one third stated they would refuse mental health services via videoconferencing. One of their concerns was the impersonal nature of videoconferencing, which could jeopardize the emotional bond of the working alliance.

Researchers have found that the presence of a good working alliance is predictive of favorable outcome, especially when assessed from the client's perspective (Lambert & Bergin, 1994; Orlinsky et al., 1994). Moreover, the working alliance has been demonstrated to have a moderate-to-large effect on the degree of clinical recovery of depression (Burns & Nolen-Hoeksema, 1992), based on the client's score on the Empathy Scale (Persons & Burns, 1985). Greist et al. (1995) have stressed the importance of a

good working alliance when working with socially anxious individuals in order to gather critical data regarding the client's situation (e.g., details of presenting problem) and to gain the client's trust (e.g., so that sensitive information is shared), leading to better understanding (i.e., better collaboration in case conceptualization). This suggests that the efficacy of CBT may be influenced by the quality of the working alliance. However, treatment studies of social anxiety disorder typically have not included this variable. In addition, it appears that the extent to which the working alliance is established in the context of effective CBT via videoconferencing awaits further empirical research (Mair & Whitten, 2000).

Because of the paucity of research and inconsistent findings to date, individual differences regarding how the working alliance is experienced in videoconferencing and its relationship to social anxiety may shed light on its role. In the present study, the working alliance was explored from the clients' perspective, and was assessed across the course of therapy.

Accessibility. Although the efficacy of CBT for social anxiety treatment studies has been established, studies seem to make the implicit assumption that access to treatment is relatively easy. The traditional mode of delivery of CBT for social anxiety requires the therapist to meet with the client face-to-face. When travel is involved, this procedure can be time consuming, and consequently the cost may be prohibitive for many. The number of professionals trained in CBT is limited, and the availability of treatment is often restricted to large metropolitan areas. For example, out of 117 Canadian hospitals, Swinson et al. (1992) found that only 18 had anxiety disorder clinics, the majority of which were in urban areas. Furthermore, specific access to therapists

skilled in CBT for social anxiety disorder is often not possible (Allen et al., 1989; Bruce & Saeed, 1999; Kunovac & Stein, 1999; Shear & Beidel, 1998), and a need to improve access has been raised (Ballenger et al., 1998; Heimberg & Juster, 1995).

Access is especially problematic in the context where severe avoidance associated with social anxiety disorder prevents many social anxiety sufferers from coming to the therapist's office, or to expose themselves to social situations without prior in-session simulated exposure. This may contribute to the maintenance of the disorder given the experimental findings that suggest that exposure can be an important variable in successful treatment of anxiety disorders (Heimberg & Barlow, 1991).

Traditionally, the solutions to access problems have been (a) to create incentives for professionals to move to underserved areas, (b) to have professionals travel to their clients, or (c) to have clients travel to the professionals. However, these solutions may involve excessive financial resources. Another solution has been to develop self-help manuals (e.g., Marks, 1995). However, in-session simulated exposure with the presence of a therapist is thought to be an important part of treatment (Shear & Beidel, 1998), especially when socially anxious individuals are usually prone to subtle avoidance.

Technologies, such as email or telephone, have been another solution. They involve some interaction and may allow clinician and client to engage in the development of a fear and avoidance hierarchy. In addition, the clinician can educate the client regarding how to gradually expose him or herself to the feared situation. However, socially anxious individuals tend to use subtle avoidance when doing exposure. Without the help of the clinician, such subtleties may go unnoticed and impact treatment outcome negatively. Even if in-session exposure is performed on the telephone or via email, and

subtle avoidance is identified by the therapist; socially anxious individuals may discount the experience as not ecologically valid because of the absence of the visual component. Discounting experiences is thought to be one of the ways by which socially anxious individuals' mistaken beliefs persist (Clark, 1999).

In this context, the solution that bridges distance while preserving the visual aspect of treatment is videoconferencing technology. Findings from communication research studies support the importance of the visual component of videoconferencing in improving the transmission of social cues and affective information. These findings show that videoconferencing is perceived to create more natural and interactive conversations than audio communication (e.g., Sellen, 1995), and that conversations via videoconferencing are more personalized than audio conversation (e.g., Whittaker, 1995). Therefore, videoconferencing technology may provide the visual aspect missing from other technologies, through which social interactions can be experienced despite a geographical distance.

In an effort to improve access to mental health services, videoconferencing has been used in the past few years. For example, some Internet companies have started to offer psychological services via videoconferencing (e.g., www.videoshrink.com). Another example is the Nunavut, a Canadian territory that uses videoconferencing to link individuals suffering from various mental health problems (e.g., anxiety, depression, substance abuse) with psychologists and counselors located in major Canadian cities (McKinnon, 2001). In fact, Canada's National Broadband Task Force (2001) recommended that all Canadian communities should be linked to interactive video

applications by the year 2004. These clinical innovations, however, need to be supported with empirical data.

Telehealth: Psychotherapy via Videoconferencing

The practice of health care delivery, diagnosis, consultation, treatment, transfer of data, and education using interactive video and other telecommunications is called telemedicine or telehealth (Nickelson, 1998) and has existed since the early 1960s. An interest in making mental health services more accessible may be responsible for an increased focus on videoconferencing (Stamm, 1998). This modality retains the visual contact necessary to provide feedback, and exposes the socially anxious individual to observation by an audience (e.g., research assistants or clinicians who participate in sessions in order to simulate an audience), while overcoming geographical barriers.

Equipment standards. What is meant by videoconferencing? Videoconferencing refers to transmission and display of moving images and sound in real time. In other words, it is a form of interactive television. Technically, it can involve room-based systems (conventional television technology), or desktop-based systems (digital technology) (Squibb, 1999). In both cases, the equipment requires each site to have a television or computer monitor, a camera (usually attached to the top of the monitor), and a microphone and speaker. At present, most telecommunication infrastructures in mental health use combined telephone lines in room-based systems (Elford et al., 1999), as they provide the best sound and image quality. For example, six phone lines will enable the transmission of 384 kbit/s, which yields an acceptable level of accuracy to support clinical applications (Baer et al., 1995; Zarate et al., 1997).

The technology of videoconferencing has the main advantage of enabling visual contact between the client and the therapist. This allows the therapist to observe the client's appearance, movements (e.g., socially anxious individuals may fidget or avoid eye contact), and non-verbal cues (Capner, 2000; Jerome & Zaylor, 2000; Rothchild, 1999). The therapist can also model specific exposure exercises and provide detailed feedback when doing exposure exercises, especially with regards to subtle avoidance. However, the use of videoconferencing for therapy, particularly regarding the efficacy of treatment (i.e., ability to decrease symptoms), and the quality of the client-therapist relationship deserve research as they remain almost untested (Capner, 2000).

Videoconferencing intervention studies. The availability of videoconferencing as a treatment modality and its potential for improving access for isolated individuals has resulted in several investigations of psychological interventions delivered via videoconferencing. A review of the literature suggests that CBT for social anxiety disorder has not yet been provided via videoconferencing. A general review of the literature on psychotherapy provided via videoconferencing yielded 15 studies. In the following section, I review these studies in order to have a sense of this developing field.

The main sources consulted for this review include PsycInfo (1887 – 2002), Medline (1966 – 2002), conference programs of the American Psychological Association and the Canadian Psychological Association (1998 - 2001), and secondary sources (e.g., citations in book chapters or journal articles). Articles were retrieved by using the terms telehealth (or telemedicine or videoconference or videocommunication), and psychotherapy (or treatment). In order to be included in this review, (a) the studies had to evaluate the effectiveness or efficacy of mental health treatments, more precisely

psychotherapy or psychiatric treatment; (b) services had to be provided via videoconferencing; (c) services had to involve client-clinician interactions; and (d) the publications had to be available in English or French. The following sections include general observations about the 15 studies, followed by a critical review of the studies. Finally, a summary of the research on psychotherapy provided via videoconferencing is provided.

General observations. The 15 studies that fit the review selection criteria were from a variety of countries including Australia, Canada, Finland, United Kingdom, and the United States, thus representing different contexts and cultures. A general examination of these studies (see Appendix A for a summary of study components) revealed that the participants primarily represent an adult population, with one study involving a child (Rendon, 1998), and two other studies involving three and 22 adolescent-mother dyads, respectively (Hufford et al., 1999, Glueckauf et al., 2002). Participants varied in terms of presenting problems, ranging from psychiatric disorders to family issues. Participants also varied in the ways they were recruited (e.g., samples of convenience, volunteers). Treatment provided included psychiatric interviews, individual and group psychotherapy (CBT, psychodynamic, prolonged supportive and explorative therapy), and counselling (e.g., family and occupational counselling). Information about therapists' training was sometimes available, and included psychiatrists, psychologists, and graduate students, all with varying years of clinical experience (sometimes not specified). As well as outcome measures, studies focused on the development of therapeutic alliance, satisfaction, and comfort.

In most publications, information regarding the therapist's videoconference training was not provided, although this has been noted as a variable that may impact the efficacy of treatment (Blignault & Kennedy, 1999; Navein, 1998). Clients were seen between 1 and 16 sessions ($M = 8$) and, in one study, two clients received 150 sessions each (Kaplan, 1997). The dimensions of treatment assessed in the 15 studies included feasibility (cf. Cowain, 2000; Dwyer, 1973; Mielonen Ohinmaa, Moring, & Isohanni, 1998; Solow, Weiss, Bergen, & Sanborn, 1971; Wittson, Affleck, & Johnson, 1961), users' views (e.g., acceptability, satisfaction, comfort, quality of services; cf. Dongier et al., 1986; Hufford et al., 1999; Kaplan, 1997; Kavanagh & Yellowlees, 1995; Manchanda & McLaren, 1998; Rendon, 1998), as well as outcome and process variables (e.g., level of functioning, symptoms, working alliance; Bouchard et al., 2000; Day & Schneider, in press, Glueckauf et al., 2002).

Review of intervention studies. The earliest accounts of the use of video communication for psychological treatment are based on case studies that involved informal self-reports. More recent research includes studies that vary in degree of experimental rigor, including case studies with standardized methods of assessment, single-case designs, and designs using group comparisons.

The first studies were conducted in the early 1960s and 1970s, and involved informal evaluations (e.g., spontaneous comments, non standardized instruments). Video communication was used for group psychotherapy (Wittson et al., 1961), psychiatric interviews (Solow et al., 1971), and brief interventions with individuals suffering from psychiatric disorders (Dwyer, 1973). Authors generally concluded that clinical tasks were feasible and satisfying, both for the clients and the providers. By compiling anecdotal

information, the viability of delivering psychotherapy via videoconferencing was convincing. From a methodological standpoint, these studies provided a weak basis for drawing inferences, however they provided a practical basis for the development of specific hypotheses as well as the motivation to pursue research in this area.

It is interesting to note that there was a gap in videoconferencing studies between 1973 and 1986. During this period, telecommunication costs tended to be high, technologies were awkward to use, and telehealth projects failed to be sustainable beyond the end of grant funding (Field, 1996). In the late 1990s, there was a resurgence of research on the topic. Additional case studies were published, some of which included standardized measures with established psychometric properties (Manchanda & McLaren, 1998; Mielonen et al., 1998; Rendon, 1998). These studies suggested that reduction in psychopathology was attained with psychotherapy provided via videoconferencing.

One study examined the quality of the client-therapist relationship (Manchanda & McLaren, 1998). The study offered observations across two points in time of an adult male suffering from mixed anxiety and depression who was treated with cognitive-behavior therapy. Although the study used standardized outcome measures, the authors did not describe specific criteria for evaluating the participant's improvement. This lack of evaluation criteria leads to arbitrary conclusions about the effectiveness of treatment. Outcome instruments included the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the Dysfunctional Attitude Scale and the Montgomery and Asberg Depression Rating Scale (Montgomery & Asberg, 1979). The client was asked to complete the Beck Depression Inventory and the Dysfunctional Attitude Scale weekly,

but the researchers reported difficulty in compliance with this request. They were able to obtain six Beck Depression Inventories, and four Dysfunctional Attitude Scales per participant. Based on visual interpretation of the scores obtained, the investigators concluded that there was a reduction in psychopathology and some modifications of dysfunctional attitudes.

Manchanda and McLaren (1998) measured the working alliance throughout treatment using the Working Alliance Inventory (Horvath & Greenberg, 1989). They reported no impairment in the working alliance based on the visual inspection of the list of total scores obtained at sessions 1, 5, and 10 for the client and at each of the 12 sessions for the therapist. Although no statistical analysis was conducted, by repeatedly assessing the working alliance, Manchanda and McLaren's data provided a detailed picture of this variable throughout treatment and is valuable in the context of the new treatment environment created by the use of videoconferencing.

Further evidence that suggests the therapeutic alliance remains positive when videoconferencing is used came from a single-case design study conducted by Hufford et al. (1999). They examined comfort, distraction, and working alliance in a volunteer sample of families with epileptic adolescents presenting with at-risk or problematic behavior. The specific at-risk or problematic behaviors included depressed affect, poor school performance-attendance, social isolation, verbal-physical aggression, noncompliance with medical routine, promiscuous sexual behaviors, and use of nonprescription drugs-alcohol. Hufford et al. (1999) compared different conditions (i.e., speakerphone, video, and office-based counselling) presented to the same clients (three

adolescent-mother dyads) over time (each dyad spoke to their therapist via each of the three modalities two times).

Hufford and his colleagues' (1999) results were based on scores obtained on the Audiovisual Equipment Rating Scale (Glueckauf, Hufford, & Webb, 1997), the Audiovisual Equipment User Survey (Hufford, Glueckauf, & Webb, 1997), and the Working Alliance Inventory (Horvath & Greenberg, 1989). The results were analyzed by visually inspecting mean score patterns. The criteria for visual inspection was clearly defined (i.e., differences between means had to be 0.5 *SD* or greater to suggest differences between treatment modalities). Furthermore, the researchers performed a content analysis of the dyad's responses to open-ended items on their scale (i.e., Audiovisual Equipment User Survey; Hufford et al., 1997). The findings revealed that mothers and adolescents reported moderately high levels of comfort and therapeutic alliance [based on the fact that all mean responses on the Working Alliance Inventory were between 5 (*agree*) and 7 (*completely agree*)]. They also observed low levels of distraction across all modalities. Based on content analysis, they found positive user perceptions of telecommunication-mediated counselling versus traditional, office-based counselling.

Hufford and his colleagues' (1999) results lend preliminary support for the use of telecommunication-mediated counselling for at-risk adolescents with epilepsy. The intensive observation of individual data improved the validity of the results. Moreover, the authors used visual analysis and provided criteria for clinical significant improvement. However, the researchers did not report on the efficacy of treatment provided via videoconferencing. Effectiveness data for this population was reported in a

modified randomized controlled field experiment conducted by Glueckauf et al. (2002), and the authors obtained similar results to those reported by Hufford et al. (1999). More precisely, they concluded that whether therapy was provided via home-based video, home-based speakerphone, or office-based counselling, the mode of delivery did not influence treatment outcomes or adherence.

Perhaps representing the maturing field, Day and Schneider's (in press) study utilized an experimental design. Effectiveness of psychotherapy via telecommunications and quality of the working alliance were observed in a true experimental design. The study involved a four-group between-subject design, with random assignment to face-to-face, two-way video, two-way audio treatment, or a waiting-list control group. In the two-way videoconference delivery mode, the client and the therapist were in two separate rooms of the same building. Brief CBT (five sessions) was provided to 80 clients who presented with heterogeneous problems at a counselling community center.

Using statistical analyses [analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA)], Day and Schneider (in press) examined the following outcome variables: client and therapist satisfaction, client's level of functioning, symptom improvement, and target complaints improvement. Outcome measures included the Brief Symptom Inventory (Derogatis, 1993), and Global Assessment of Functioning Scale (American Psychological Association, 1994). Dimensions of the working alliance were also examined; that is, therapist exploration, client participation, and client hostility in treatment groups at session four (Vanderbilt Psychotherapy Process Scale; Suh, O'Malley, Strupp, & Johnson, 1989). This was based on the rationale that at session four the alliance is stable. In addition, an instrument developed specifically to assess the

provision of services using technology was used (i.e., Distance Communication Comfort Scale, Schneider, 1999). Client and therapist satisfaction were measured with a modified version of the Client Satisfaction Scale and the Therapist Satisfaction Scale (Tracey & Dundon, 1988).

The treatment groups did not show statistically significant mean differences in terms of outcome. Treatment groups were all effective and superior to a wait-list control group at post-treatment. Of the three working alliance dimensions assessed (i.e., therapist exploration, client participation, and client hostility), only client participation reflected a meaningful difference, indicating that clients participated *less* in the face-to-face mode than in either of the technologically mediated treatments. Day and Schneider (in press) reported that the three treatment modalities did not lead to differential effectiveness or quality in the working alliance at the fourth session. They concluded that the increased client participation with technologically mediated treatments was favorable for the distance modalities. In speculating about the cause of this observation, they suggested that because of the distance, clients may have made more of an effort to communicate and took more responsibility for therapeutic interactions than they did in face-to-face therapy. In addition, they suggested that "distance made openness seem safer" (Day & Schneider, in press, p. 11).

Day and Schneider's (in press) study represents a pioneer effort in terms of randomized controlled trials using videoconferencing for psychotherapy, and points the way for refining future studies, which likely will combine both group and individual analyses. For example, although group analyses with higher statistical power can improve our confidence in the findings, they can obscure the fine-grained analysis of individual

change. Several authors have called for the need for practitioners to integrate an intensive assessment component for interventions offered via videoconferencing (e.g., Darkins & Cary, 2000; Field, 1996). The analyses of group comparisons at pre- and post-treatment or at the fourth session did not include an examination of individual change patterns, moreover, the authors did not report follow-up findings.

Another challenge to future research apparent in the Day and Schneider (in press) study is the issue of inter-group differences (i.e., whether there are differences between clinicians or differences between participants). In the Day and Schneider study, 10 clinicians treated participants in each group. Although the therapists reported adhering to the CBT model after each treatment, treatment integrity was not examined. In addition, among the participants there was considerable heterogeneity in the presenting problems (e.g., eating disorders, depression, interpersonal conflicts, smoking cessation, stress, grief, height phobia). Because heterogeneous problems were not analyzed separately, it is impossible to tell if the treatment was differentially effective for different presenting problems.

From a technology perspective, the use of two-way videoconference from room to room in the same building yielded greater picture and sound quality than today's typical videoconference. It is not possible to know whether participants would have been as satisfied and comfortable with the technology if videoconferencing from different locations would have been used.

As noted earlier, the Day and Schneider (in press) study provides an important benchmark in the evolution of research on psychotherapy via videoconferencing. When evaluating the practical significance of Day and Schneider's findings, the next step in the

development of research strategies clearly emerges. Important questions arise such as whether participants reached a level of functioning similar to a normal/non-consulting population (see Jacobson & Truax, 1991; Kirk, 1996), whether effectiveness was maintained over time (follow-up), and what thoughts participants had about their experience, especially with videoconferencing from geographical distance. By examining clinical improvement in a homogeneous population and by documenting treatment effectiveness and related concepts (e.g., working alliance, client and therapist satisfaction, and client comfort with the medium), more information can be drawn from CBT delivered via videoconferencing. Furthermore, post-treatment feedback from participants might provide insight into the attitudes and behaviors of participants that may relate to positive outcome in videoconferencing as a mode of delivery for CBT. By examining clinical improvement in a homogeneous population (i.e., public speaking anxiety) and by documenting treatment effectiveness and related concepts (e.g., working alliance, client and therapist satisfaction, and client comfort with the medium), more information can be drawn from the results of CBT via videoconferencing. Furthermore, post-treatment comments from participants might provide insight into variables to include in future investigations that may help understand a potentially more active attitude of participants in distance modes of delivery of CBT.

Bouchard et al. (2000) examined a somewhat homogenous population in which CBT for panic disorder (with agoraphobia) was provided via videoconferencing. Following a case-study format (without baseline), 12 CBT sessions were provided to 8 adults (3 males, 5 females). Non-parametric tests (Wilcoxon) were used to assess efficacy by comparing pre- to post-treatment outcome and working alliance variables. Because

these results are presented as preliminary data from a larger study involving a control group, only pre- and post-treatment data were reported. Outcome variables included panic attack frequency and panic apprehension (recorded on daily diaries), global assessment of the severity of panic disorder with agoraphobia (Panic and Agoraphobia Scale; Bandelow, 1995), self-efficacy to control panic attacks (Self-Efficacy to Control Panic Attacks Questionnaire; Gauthier, Bouchard, Côté, Laberge, & French, 1993), trait anxiety (State-Trait Anxiety Inventory; Spielberger, 1983) and global functioning (Sheehan Disability Scale; Ballenger et al., 1998). Working alliance was measured using the Working Alliance Inventory (Horvath & Greenberg, 1989).

Results indicated statistical improvement on all outcome variables. The authors reported a high average working alliance score after the first session. The authors concluded that it is possible to efficiently reduce anxiety symptoms when providing treatment via videoconferencing and that "a comfortable working alliance is possible" (Bouchard et al., 2000, p.1004). The authors also listed a few anecdotal but clinically relevant observations. Of particular note, 5 out of 8 participants were panic-free at post-treatment, and one client was able to increase his driving distance from 50 to 130km from his home after treatment. Although Bouchard et al. (2000) examined a homogenous population, the study does not provide a control condition, and has only pre- and post-treatment assessment for outcome variables, and a single session assessment of the working alliance. Consequently, there are several factors that challenge the changes observed in the outcome variables (e.g., history, maturation). Moreover, the working alliance at session one may not be representative of the working alliance throughout treatment or at a point where it is thought to be stable (cf. Day & Schneider, in press).

Nevertheless, Bouchard and his colleagues' (2000) preliminary results are promising. Given that the mechanisms of change associated with exposure and cognitive restructuring for panic disorder are similar to those of social anxiety disorder (Clark, 1997), this allows us to speculate that CBT for social anxiety disorder provided via videoconferencing may be effective in reducing social anxiety symptoms (e.g., cognitive, behavioral, and physical symptoms), as well as forming an effective working alliance.

Satisfaction with therapy. Reports of satisfaction in psychosocial treatments via videoconferencing are usually very positive (Capner, 2000; Mair & Whitten, 2000). However, they have not systematically been part of most efficacy studies. There is general agreement that outcome assessment needs to include measures of client satisfaction because this variable may impact efficacy of treatment (Kazdin, 1986). For example, a high dissatisfaction rate may impact on how participants involve themselves in treatment and collaborate with the therapist.

From a review of the literature, Mair and Whitten (2000) identified a number of components of satisfaction that are important to include when assessing satisfaction with telehealth: (a) overall satisfaction with the videoconferencing service, (b) levels of satisfaction with communication via this medium, (c) comparison between videoconferencing consultations and traditional face-to-face consultations, (d) technical performance, as well as (e) client's willingness to use videoconferencing in the future. Tracey and Dundon (1988) developed a satisfaction measure that has been used in the context of individual psychotherapy via videoconferencing and includes the characteristics identified by Mair and Whitten. Therefore, their instrument appears to be

the measure of choice. In the present study, satisfaction was assessed during treatment in order to give a perspective of whether satisfaction levels change during treatment.

One study (Day & Schneider, in press) assessed both satisfaction (i.e., opinion of the worth of the therapeutic experience) and outcome (e.g., symptoms, overall functioning, presenting problems). Day and Schneider did not find statistically significant differences between face-to-face, audio, and video treatment in terms of satisfaction, as measured at the end of treatment (modified Client and Therapist Satisfaction Scales, Tracey & Dundon, 1988). The authors acknowledged, however, that their study had insufficient power to detect medium and small effects. These preliminary results suggest that the role of satisfaction of clients should be explored in future efficacy or effectiveness studies. Satisfaction with therapy was examined for exploratory purposes in the present research project.

Comfort with therapy. Studies that have assessed comfort have generally revealed high levels of comfort with videoconferencing (Capner, 2000; Hufford et al., 1999; Jerome & Zaylor, 2000; Schneider, 1999). However, comfort is often not assessed in CBT treatment studies. Only two treatment studies examined comfort with a psychosocial treatment provided via videoconferencing (Hufford et al., 1999; Schneider, 1999) -- epileptic adolescents and a heterogeneous counselling center population, respectively.

Hufford et al. (1999) measured comfort using the Audiovisual Equipment Rating Scale (Glueckauf et al., 1997) and the Audiovisual Equipment User Survey (Hufford et al., 1997), which was administered after each of the six sessions for 3 mother-daughter dyads. Means of the Audiovisual Equipment Rating Scale were visually inspected, and a content analysis of responses on open-ended items of the Audiovisual Equipment User

Survey was performed. The investigators reported that mean responses on the Audiovisual Equipment Rating Scale indicated overall comfort with the three modes of session transmission (i.e., office, speakerphone, and video system). On the Audiovisual Equipment User Survey, mothers and adolescents reported lower comfort with the equipment when in the audio condition. The authors suggested that this may be attributable to the absence of visual input.

Schneider (1999) used the Distance Communication Comfort Scale (Schneider, 1999), which is a 36-item 7-point Likert scale that measures the degree of comfort with audio, video, and face-to-face communication with 80 clients representing a heterogeneous counselling center population. The scale was administered to participants at the 1st, 2nd, and 5th session of a total of five sessions. Schneider (1999) examined whether comfort levels changed over time and specifically which comfort variables, over what time period, and in which group (face-to-face, audio, video). He hypothesized that comfort with technology would increase with increased exposure to the given technology.

Using MANOVA followed up with ANOVAs, Schneider (1999) found that the level of comfort with audio increased statistically significantly over time for participants in the audio treatment group only. He found that an increase in comfort with audio occurred between session 2 and session 5. The level of comfort with video changed statistically significantly over time for participants in the video treatment group only. In the video group, increases between session 1 and 2 and between session 2 and 5 were both statistically significant. Comfort levels did not change in any of the other treatment groups. The level of comfort with face-to-face treatment did not show statistically significant differences between groups or within groups over time. Schneider also

performed an aptitude by treatment interaction analysis. This analysis showed that comfort with audio contributes significantly to treatment outcome levels. The video group's aptitude by treatment pattern was similar to that of the audio group. Unfortunately, Schneider did not report effect sizes. Because Schneider's measure was developed especially for the context of individual psychotherapy via videoconferencing, and is the only one in the literature at present, it appears to be the measure of choice. Therefore, in the present study, comfort levels were assessed at regular intervals during treatment in order to give a perspective of how comfort levels change during treatment.

It is not known whether the videoconferencing context will facilitate or reduce comfort in socially anxious individuals. Greist et al. (1995) suggest that in a face-to-face session, greater physical space between the therapist and the client may increase the socially anxious individual's comfort. Therefore, comfort was examined for exploratory purposes in the present research.

In summary, videoconferencing has been identified as a potentially effective way to deliver mental health services because it bridges geographical distance while maintaining the visual aspect of treatment. Early studies focused on acceptance, comfort, feasibility, and anecdotal information. Research so far supports the feasibility and potential efficacy of treatment provided via videoconferencing for some specific conditions (i.e., adult suffering from mixed anxiety and depression, Manchanda & McLaren, 1998; epileptic adolescents presenting with at-risk or problematic behavior, Hufford et al., 1999), although CBT for public speaking anxiety has not been studied. Outcome variables such as general symptoms, level of functioning, as well as depressive and anxious symptomatology were shown to change from pre- to post-treatment via

videoconferencing. Quality of the working alliance, satisfaction with treatment, and comfort with the medium have been assessed in a small number of efficacy studies and yielded promising results. Methodological problems include the absence of control conditions, the omission of statistical or clinical significance analyses, and a lack of combined assessment of satisfaction and efficacy.

Based on the videoconferencing literature and the evidence from face-to-face CBT studies for social anxiety, I expect that social anxiety symptomatology (i.e., anxiety during speech task, duration of speech task, public speaking anxiety) will decrease as a result of 12-session CBT, and that outcomes will be maintained at 3-month follow-up. The extent to which negative cognitions decrease (public self-consciousness, fear of negative evaluation, internal attributions) was examined for exploratory purposes as these variables have not systematically been part of most efficacy and effectiveness studies in videoconferencing. Moreover, working alliance, client satisfaction, and comfort with the medium over time were also explored during treatment. Their relationship with anxiety reduction was also examined.

Transfer of CBT from Face-to-Face to Videoconferencing

The two components of CBT, cognitive restructuring and exposure, need attention in the transfer from face-to-face CBT to CBT via videoconferencing. Cognitive restructuring strategies are implemented verbally, which is technically transferable to the videoconferencing environment. Moreover, because one of the fears of socially anxious individuals is that their anxiety is visible to others, the visual component of videoconferencing potentially makes this telecommunication a particularly effective medium for challenging this belief. For example, the individual can gather disconfirming

data in the context of the session itself by having observers rate the visibility of his or her anxiety.

In-session simulated exposures can be conducted via videoconferencing by having an audience present at either the clinician's or the client's location (in which case, audience members would be asked to come into the session by the project staff who are present at the client's location). The presence of the therapist and additional audience members gives individuals an opportunity to identify and dispute their cognitions. Because in-session simulated exposures are controllable (i.e., audience members can role-play specific behaviors), the exposure situations can be made more or less comfortable. As Shear and Beidel (1998) wrote: "Being present at the session permits the therapist *to witness* [italics added] and respond to what happens" (p. 41). In addition, visual contact with an audience insures that the individual does not avoid exposure. Another option is to videotape the client, and inform the client that the videotaped performance will be shown to an audience. Finally, the videotape can also be used as feedback to the client (Clark, 1999). Clark describes a method of cognitive preparation that can precede the showing, where the client is asked about his or her expectations. The videotape is then shown to the client, and compared with the pre-stated expectations. These methods were incorporated into the CBT used for the present study.

Summary

Social anxiety disorder is characterized by the fear of being humiliated or judged negatively in social situations, and involves a number of cognitive, behavioral, and physical symptoms. Social anxiety results in avoidance of social situations and often impairs people's social and occupational lives to a significant degree. In cognitive theory,

cognitions play a central role in maintaining the fear, avoidance, and physical anxiety symptoms. A review of the literature revealed empirical support regarding the efficacy of cognitive restructuring and exposure (i.e., CBT) for treating social anxiety disorder. Social anxiety symptomatology (e.g., behavior tests, self-reports about social anxiety and public speaking anxiety, and clinicians' ratings) have been shown to improve following CBT and maintained at 3-month follow-up. In addition, a few studies have shown that cognitions (self-statements, fear of negative evaluation, public self-consciousness, and internal attributions) change as a result of CBT.

Videoconferencing has been identified as one way to bridge geographical distance while keeping the visual aspect of treatment, and research so far supports the feasibility and potential efficacy of treatment provided via videoconferencing for some specific conditions (e.g., Hufford et al., 1999; Manchanda & McLaren, 1998). Efficacy has been assessed based on pre- and post-treatment self-report measures. Quality of the working alliance, satisfaction with treatment provided via videoconferencing, and comfort with the medium have been assessed in a small number of efficacy studies and yielded promising results.

Only a few investigations of psychotherapy via videoconferencing have been conducted and revealed a number of methodological problems that need to be solved. For example, (a) efficacy has not been assessed in a manner that is clinically meaningful for targeted problems; (b) anecdotal information and the absence of control conditions have limited our ability to draw inferences; (c) the omission of statistical or clinical significance analyses pose limitations to clinical knowledge; and (d) many studies report an assessment of satisfaction *or* efficacy, instead of both.

From a theoretical perspective, a single-case design is particularly suited to CBT (Blampied, 1999) and videoconferencing. First, it can demonstrate that treatment may have promoted change, which is the initial scientific challenge for CBT. Second, the single-case design avoids averaging across participants and involves intensive measurement, providing detailed information about individual patterns of change over time. Because psychological services provided via videoconferencing are not well understood, it is important not to obscure the fine grained analysis of individual data through aggregation. Third, the flexibility of single-case designs accommodates the uniqueness of each client. Finally, single-case designs facilitate ethical innovation and accountability in that they offer a safe way to explore new territory (because individuals are intensively and individually assessed). The possibility of developing an innovative procedure such as CBT via videoconferencing while maintaining scientific standards was a major reason for selecting a single-case design.

The decision to use a single-case design rather than a group-based design resides in the philosophical foundations of each design and the context of knowledge in which the present study is performed. Fundamentally, group-based designs use aggregate statistics, in which individual differences are considered as error. Single-case designs observe individual differences and attempt to understand them. In a research context where many studies have already been conducted, it is relatively safe to assume that individual differences are error, and group designs are appropriate. However, due to the limited knowledge in the area of psychological treatment provided via videoconferencing, the detection of idiosyncratic responses to the intervention could contribute to the development of hypotheses. This design therefore assessed appropriately

the efficacy of treatment, and at the same time preserved individual differences as a source of information.

In the present study, I address methodological shortcomings of previous investigations in the following ways. First, the focus of the CBT intervention is a circumscribed form of the most prevalent of anxiety disorders (social anxiety disorder), public speaking anxiety. Second, the intervention of choice, CBT, is based on cognitive theory and represents an empirically supported treatment. Third, standardized outcome measures were used within a single-case design with replications. In this quasi-experimental design, individuals are their own controls, in that a "no intervention period" is compared with an "intervention period" for each person. Fourth, anxiety was assessed in an individuals' naturalistic environment. Fifth, treatment efficacy was determined using visual analysis, statistical analysis, and clinical significance. Finally, changes in cognitions, working alliance, satisfaction, and comfort with the medium were examined for exploratory purposes.

CHAPTER III – METHOD

Hypotheses and Questions

The goal of this study is to determine the efficacy of cognitive restructuring and exposure techniques (i.e., CBT) provided via videoconferencing in producing significant changes in social anxiety symptoms of public-speaking anxious individuals. A single-case design (Barlow & Hersen, 1984) was used to test the following hypotheses and questions (see Figure 1 for a flow chart of the single-case design and dependent variables, and Appendix B for a summary of measures collected, nature of data, data points, and analyses). The central question examined is: To what extent will participants suffering from public speaking anxiety demonstrate statistically and clinically significant improvement in social anxiety symptomatology and public speaking anxiety following treatment implementation, compared with a pre-treatment baseline; and to what extent will improvements be maintained at 3-month follow-up? Social anxiety symptomatology was assessed as intensity of anxiety in speech task and speech duration, and public speaking anxiety by level of public speaking anxiety. Pre-planned orthogonal contrasts were posed for each hypothesis (see Figure 2). Statistical, visual, and clinical significance were utilized.

Research Hypotheses

Hypothesis 1. It is expected that participants will report a change in the intensity of their anxiety (i.e., SUDS ratings) in a public speaking situation, as assessed during the impromptu speech task (ST; Beidel, Turner, Jacob, & Cooley, 1989), which was completed at the initial interview, once at pre-treatment, once at post-treatment, and once

Initial Interview	3 or 5-week Baseline (Pre-treatment)	12-week CBT	1-week Post-Treatment	1-week at 3-month Follow-Up
Overview of study SCID Decision about suitability Demographics ST (SUDS; duration) PRCS PSCS FNE-M ASQ SISST	Diary[a] (SUDS) ST (SUDS; duration) PRCS SISST DCCS-V	Diary[b] (SUDS) PSC[c] FNE-M[c] ASQ[c] WAI[c] CSS[c] DCCS-V[c]	Diary[d] (SUDS) ST (SUDS; duration) PRCS PSCS FNE-M ASQ SISST CGI P-SCID	Diary[d] (SUDS) ST (SUDS; duration) PRCS PSCS FNE-M ASQ SISST CGI P-SCID

Figure 1. Flow chart of single-case design and variables. No subscript indicates that the variable was assessed once. SCID = Structured Clinical Interview for DSM; ST = Speech Task; PRCS = Personal Report of Confidence as a Speaker; PSCS = Public Self-Consciousness Scale; FNE-M = Fear of Negative Evaluation scale - Modified; ASQ = Attributional Style Questionnaire; SISST = Social Interaction Self-Statement Test; Diary = Social Anxiety Diary; DCCS-V = Distance Communication Comfort Scale – Video subscale; WAI = Working Alliance Inventory; CSS = Client Satisfaction Scale; CGI = Clinician Global Impression scale. P-SCID = Partial Structured Clinical Interview for DSM. [a] Assessments conducted daily for 3 weeks. [b] Assessments conducted every second week (6 weeks). [c] assessments conducted every second session (6 times). [d] Assessments conducted daily for 1 week

Contrast	Initial Interview	3 / 5-week Baseline (Pre-treatment)	12-week CBT	1-week Post-Treatment	1-week at 3-month Follow-Up
First contrast	I	I			
Second contrast				I	I
Third contrast	I	I		I	I

Figure 2. Pre-planned orthogonal contrasts for the hypotheses 1, 2, and 3.

at 3-month follow-up. It was expected that there will be (a) no difference or an increase in anxiety between the initial interview and pre-treatment, (b) the same or a decrease in anxiety between post-treatment and follow-up, and (c) a decrease in anxiety between the combined initial interview and pre-treatment, and combined post-treatment and follow-up assessments. Intensity of anxiety is operationalized by the Subjective Units of Discomfort Scale ratings (SUDS; Wolpe & Lazarus, 1966).

Hypothesis 2. It is expected that participants will report a change in their speech duration (in minutes), as assessed by the impromptu speech task (ST; Beidel et al., 1989), which was completed at the initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. It was expected that there will be (a) no difference or a decrease in duration between the initial interview and pre-treatment, (b) the same or an increase in duration between post-treatment and follow-up, and (c) an increase in duration between the initial interview and pre-treatment, and combined post-treatment and follow-up assessments.

Hypothesis 3. It is expected that participants would report a change in their public speaking anxiety, which was assessed at the initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up with the Personal Report of Confidence as a Speaker measure (PRCS; Paul, 1966). It was expected that there will be (a) no difference or an increase of public speaking anxiety between the initial interview and pre-treatment, (b) the same or a decrease in public speaking anxiety between post-treatment and follow-up, and (c) a decrease in public speaking anxiety between the combined initial interview and pre-treatment and combined post-treatment and follow-up assessments.

Exploratory Questions

In order to further inform the primary analysis, and better understand the results obtained, variables that have been linked to treatment efficacy, both in terms of social anxiety and psychological treatment via videoconferencing, were explored. Because of the paucity of research and conflicting findings, they were posed as questions rather than hypotheses.

Daily Social Anxiety

Previous CBT research has not assessed change in daily social anxiety in specific social situations. Because the purpose of CBT is to decrease social anxiety in its everyday occurrence, changes in daily social anxiety were examined. Two indicators of change were assessed using the SUDS (Wolpe & Lazarus, 1966). Both daily social anxiety in situations that occurred and daily expected social anxiety for situations that did not occur were assessed. Three situations, identified collaboratively by the participant and the therapist, were rated. The situations reflected one difficult (situation #1), one moderate (situation #2), and one mild (situation #3) social situation. The extent to which daily social anxiety ratings decrease provides verification that treatment had the expected impact.

Question 1. To what extent will participants report a change in the intensity of the maximum level of expected and actual social anxiety during three daily social anxiety situations (i.e., the difficult, moderate, and mild situations), as assessed with SUDS ratings recorded in a social anxiety diary? Ratings were completed every day for 11 weeks over the course of baseline, treatment, post-treatment phase, and at 3-month

follow-up. A rating was obtained for situations that actually occurred and an expected rating was obtained for situations that did not occur.

Negative Cognitions

Previous research has not assessed change in cognitions in CBT via videoconferencing. Because the purpose of CBT is to change the symptoms (e.g., reduce anxiety) and changes in symptoms are theoretically associated with changes in cognitions, both the reduction in cognitions and the relationship between cognitions and anxiety were explored. The extent to which cognitions are modified provides verification that treatment had the expected impact.

Question 2. (a) To what extent will participants report a decrease in public self-consciousness (i.e., PSCS; Public Self-Consciousness Scale, Scheier &Carver, 1985), fear of negative evaluation (i.e., FNE-M; Fear of Negative Evaluation-Modified, Watson & Friend, 1969), and internal attributions (i.e., ASQ; Attributional Style Questionnaire, Peterson et al., 1982), which were assessed at the initial interview, six times over the course of treatment (at sessions 1, 3, 5, 7, 9, 11), at post-treatment, as well as at 3-month follow-up?

(b) To what extent will participants' public self-consciousness (i.e., PSCS), fear of negative evaluation (i.e., FNE-M), and internal attributions (i.e., ASQ), be significantly related (linear relationship) to daily expected social anxiety (SUDS) in the mild social anxiety situation in the initial interview and over the course of treatment?

The daily expected social anxiety measure was the average score for the week that corresponded to the completion of the cognitions measures. Ratings for the mild situation were used for correlations as opposed to ratings from the difficult or moderate situations

because of the greater variability that was expected of the data; which, from a statistical perspective, is preferable when using correlations.

Self-statements

Question 3. To what extent will participants report a decrease in negative thoughts (SISST-N), and an increase in positive thoughts (SISST-P), which was assessed at the initial interview, at the pre-treatment assessment, once at post-treatment as well at follow-up with the Social Interaction Self-Statement Test (SISST: Glass, Meluzzi, Biever, & Larsen, 1982)?

Working Alliance

Previous research has not assessed the working alliance in the treatment of social anxiety, but working alliance is considered essential to CBT (Beck et al., 1979). Moreover, because this variable has been examined in numerous other psychotherapy studies and some videoconferencing studies (Glueckauf et al., 2002; Hufford et al., 1999; Ghosh et al., 1997), it is included in the present study. Because most studies have analysed the total score, total score was used in the present study.

Question 4. (a) To what extent will participants report an increase in working alliance (Working Alliance Inventory; WAI; Horvath & Greenberg, 1989), which was assessed at sessions 1, 3, 5, 7, 9, 11?

(b) To what extent will participants' levels of working alliance (WAI) and daily expected social anxiety (SUDS) in the mild situation be significantly related (i.e., linear relationship)? The daily expected social anxiety measure was the average score for the week that corresponded to the completion of the working alliance measure.

Client Satisfaction and Comfort

Kazdin (1986) strongly recommends including measures of client satisfaction in outcome studies. Studies of psychosocial treatments via videoconferencing frequently report satisfaction (Capner, 2000; Mair & Whitten, 2000), but often not paired with the evaluation of treatment efficacy (i.e., social anxiety). In the present study, CBT was provided via a new medium, videoconferencing, therefore client satisfaction was explored.

Question 5. (a) To what extent will participants report an increase in satisfaction with treatment, which was assessed six times over the course of treatment (at sessions 1, 3, 5, 7, 9, 11), with a modified Client Satisfaction Scale (CST: Tracey & Dundon, 1988)?

(b) To what extent will participants' levels of satisfaction over the course of treatment (CST) and daily expected social anxiety (SUDS) in the mild situation be significantly related? The daily expected social anxiety measure was the average score for the week that corresponded to the completion of the satisfaction measure.

Finally, comfort with videoconferencing has been related to change in symptoms over treatment (Schneider, 1999). With socially anxious individuals, videoconferencing may facilitate or reduce comfort, which may be related to better or worse outcome. It is possible that the video camera will increase their discomfort, or that the impression of distance will make them more comfortable. Client comfort was therefore explored.

Question 6. (a) To what extent will participants report an increase in comfort with videoconferencing, which was assessed seven times (at the initial interview and at sessions 1, 3, 5, 7, 9, 11), with the Distance Communication Comfort Scale (DCCS-V: Schneider, 1999)?

(b) To what extent will participants' comfort with videoconferencing (DCCS-V) over the course of treatment and daily expected social anxiety (SUDS) in the mild situation reflect a linear relationship? The daily expected social anxiety measure was the average score for the week that corresponded to the completion of the comfort measure.

Participants

Eight volunteers (6 men, 2 women, age range 21-35) diagnosed with social anxiety disorder participated in the study. Inclusion criteria were: (a) severe public speaking anxiety; (b) social phobia (APA, 2000); (c) no other psychiatric disorder than social phobia (APA, 2000) in need of immediate treatment; (d) between 18 and 60 years of age; (e) if on medications, dosage stable for the past 3 months, still experiencing social anxiety, and willing to keep the dosage constant without changing their medication throughout the study; (f) fluent in English.

Severe public speaking anxiety was determined from a performance on a behavioral test (Impromptu speech task; Beidel et al., 1989). The Structured Clinical Interview for DSM-IV was used to determine whether they had a social phobia diagnosis, using the DSM-IV-TR criteria (APA, 2000). Clinical and sub-clinical comorbidities of DSM-IV-TR Axis I and II were included in this study because of their natural and frequent co-occurrence with social phobia (Schneier et al., 1992). During the telephone and diagnostic interviews, I determined whether the English was adequate. Exclusion criteria were specific psychological disorders (DSM-IV-TR criteria for psychotic, major depression, bipolar, substance-use, eating disorders), organic disorders, and borderline, schizotypal, or paranoid personality disorders.

All 35 respondents recruited through posters on the University of British Columbia (UBC) campus and notices in the local media (see Appendix C) made contact by telephone. During a telephone interview (see Appendix D) 19 participants were excluded: 7 participants did not meet the criteria for severe public speaking anxiety, 4 were not reachable, 2 met criteria for major depression and substance-use, 1 developed social anxiety after a traumatic brain injury, 1 was unstable with his medication, 1 had severe difficulties expressing himself in English, 1 could not commit for the duration of the study, 1 preferred to continue his current psychoanalytic treatment rather than using CBT, and 1 was located in another city.

The 16 participants who showed some signs of severe public speaking anxiety were scheduled to receive a thorough screening assessment that evaluated all inclusion and exclusion criteria. Of those, 5 did not meet inclusion criteria for severe public speaking anxiety (e.g., were able to speak during 10 minutes in front of an audience of four people and a video camera), 2 were excluded for meeting criteria for other disorders in need of immediate treatment (i.e., post-traumatic stress disorder, bulimia nervosa), and 1 did not come to the assessment and withdrew his interest. This resulted in 8 participants. Diagnostic interviews were audio taped, and a counselling psychology doctoral candidate independently rated the clinical interview, in order to verify diagnoses of social anxiety disorder (inter-rater reliability of 1.00). From the 8 individuals who started the study, 3 dropped out, resulting in an attrition rate of 38%.

Eight participants was deemed adequate because single-case designs with replications across individuals need to include a minimum of 2 participants (Kazdin, 1982) and typically involve less than 5 participants (Galassi & Gersh, 1991). The average

attrition rate for face-to-face treatment conditions involving both individual and group CBT for social anxiety disorder is 18%, with a standard deviation of 11 (Taylor, 1996). No information was provided in the literature regarding attrition rates for treatment provided via videoconferencing.

The final sample included 3 men and 2 women, and compares with other studies in terms of gender of participants. Out of 5 treatment completers, only 1 participant reported at the initial interview being affected by the gender of the audience (Sami, male, was more anxious if there were more women in the audience). From a theoretical perspective, this is not problematic, because exposure to a female therapist and mostly female audience members during in-session exposures offered the opportunity to challenge what made him most anxious. From a clinical perspective, the participant was not so severely influenced by a female audience that he could not participate in treatment or do in-session exposures to exclusively female audiences. From a research perspective, because the situation represented the worse case scenario, the fact that this male participant was more anxious with a female audience did not limit the conclusions we can draw from his performance over treatment.

Participants averaged 28.5 (SD = 6.3) years in age. Six were men. Five were Caucasian, 2 were from the Middle East, and 1 was from Asia. Five were university students, whereas 3 were employed. Four were married or living with a partner, and 4 were single. Education ranged from 14 to 21 years (M = 15.3; SD = 2.3). Participants had been suffering from social anxiety for an average of 15.0 years (SD = 9.8), with a range of 3 to 31 years. Of the 3 participants who dropped out, one had to move to another country to take care of his dying father, and 2 had scheduling problems. Table 1 provides

a summary of the demographic information, and Appendix E includes a detailed description of each participant. In order to protect confidentiality, the individuals who participated in the study were given pseudonyms, and other identifying characteristics were changed.

Table 1

Demographic information

Participant Pseudonym	Age	Gender	Ethnicity	Education	Occupation	Marital Status
Zakaria	thirties	M	Middle East	doctoral candidate	Student	Married
Mike	thirties	M	Caucasian	2 years post-secondary	Employed	Common Law
Nella	thirties	F	Caucasian	2.5 years university	Employed	Common Law
Claudel	twenties	F	Caucasian	4th year university	Student	Single
Sami	twenties	M	Middle East	4th year university	Student	Single (girlfriend)
Vu	twenties	M	Asian	3rd year university	Student	Single
Maxim	twenties	M	Caucasian	3rd year university	Student	Single
Alexander	thirties	M	Caucasian	2 years post-secondary	Employed and Student	Common Law

Instrumentation

Structured Clinical Interview (SCID) for DSM-IV. One of the most frequently used diagnostic interviews is the Structured Clinical Interview for DSM (First, Spitzer, Gibbon, & Williams, 1995). Given the importance of differential diagnosis when studying social anxiety disorder (Greist et al., 1995), the Structured Clinical Interview for DSM-IV appeared particularly appropriate. This tool differentiates between social anxiety disorder and other anxiety disorders, such as panic disorder, agoraphobia, and

generalized anxiety disorder, and also other disorders such as depression and substance abuse.

In the present study, the Structured Clinical Interview for DSM-IV (First et al., 1995) was used to diagnose Axis I disorders (i.e., confirm the diagnostic of social phobia and identify exclusionary diagnoses) and presence of Axis II avoidant personality disorder at the initial interview. The social phobia portion of the SCID (First et al., 1995) was administered by an external evaluator not involved with the project at 1-week post-treatment and at 3-month follow-up. In the present study, this portion of the SCID was used to determine each participant's clinical or non-clinical diagnostic status at the conclusion of treatment and at 3-month follow-up.

The diagnostic procedures of the Structured Clinical Interview for DSM-IV are built into the structure of the interview, with branching logic to items individually appropriate for each individual, based on their answers to interview questions (First et al., 1995). The administration time is between 1 to 2 hours. Williams et al. (1992) report raters' agreement kappas varying between .47 and .63 for social phobia in heterogeneous samples of individuals using the DSM-III-R criteria. Although a kappa of .47 is considered poor, it is possible that a sample consisting solely of anxious individuals would provide a potentially larger kappa value. Although this value was obtained with DSM-III-R criteria, psychometric properties for the DSM-IV-TR were expected to be similar (Greist et al., 1995), as diagnostic criteria did not undergo major modifications. I conducted diagnostic interviews in-person prior to accepting participants in the study.

Public Speaking Anxiety and Social Anxiety Symptomatology

Impromptu speech task (ST). An impromptu speech task (ST; Beidel et al., 1989) presented to a small audience has been used with socially anxious individuals to elicit a response because of their high frequency of public speaking anxiety. Studies have found that peak anxiety experienced during the speech task changes as expected with CBT for social anxiety (Heimberg et al., 1985; Taylor, Woody, Koch, et al., 1997). In the present study, the impromptu speech task was used in a standardized form at the initial interview, pre-treatment, post-treatment, and 3-month follow-up. Peak anxiety (i.e., intensity) and duration were used as indicators of social anxiety symptoms to test hypothesis 1 and hypothesis 2 (i.e., dependent variables).

Based on the method developed by Beidel et al. (1989), participants are asked to do an impromptu speech to a small audience. In the present study, trained graduate and undergraduate research assistants and professors served as audience members. Audience members were balanced for gender and age. The speech tasks were performed in a different venue from the treatment venue in order to decrease the risk that participants' performance on the speech task would be influenced by an increased familiarity with the venue. The difference between the speech task and in-session exposures is that the speech task is identical in format and topic for all participants, whereas the in-sessions exposures are individually and gradually designed as a treatment component (exposure) to modify each participant's cognitions and decrease their anxiety.

Participants were asked whether they self-medicated (i.e., used medication, alcohol, or drugs) prior to each speech task assessment. They were given different sets of topics at different assessment points. Topics were of similar difficulty level and have

been used in previous exposure tasks (e.g., Heimberg, 1991, 2001; Taylor, Woody, Koch, et al., 1997). They included, for example, environmental conservation and seat belt laws. Participants were given 3 minutes to prepare. They were told that the speech would last approximately 10 minutes. They were also informed that their presentation would be done in front of an audience of four people (i.e., trained research assistants who simulated an audience) and a video camera. Members of the audience were attentive but not overtly encouraging. Presentations were terminated after 10 minutes by the project staff, or earlier if the participant was unable to continue talking. The participant was then asked to rate his or her peak anxiety on a 0 (*no anxiety, calm, relaxed*) to 100 (*very severe anxiety, worst ever experienced*) SUDS (Wolpe & Lazarus, 1966), with higher rating indicating higher anxiety. Speaking times were also recorded in minutes.

The reliability of this measure in a 10-minute impromptu-speech behavioral assessment test has been found to be acceptable, as measured by correlations between two assessments performed one week apart (Beidel et al., 1989). Speaking times were highly correlated (r = .77); whereas self-rating of peak anxiety moderately correlated over time (r = .48) (Beidel et al., 1989). Discriminant validity of the speech task was indirectly supported in an evaluation of its concordance and discordance with other anxiety measures (Matias & Turner, 1986). Discriminant validity of another behavioral test for socially anxiety (Simulated Social Interaction Test; Curran, 1982) has been supported (Monti, Wallander, Ahern, Abrams, & Munroe, 1983).

Personal Report of Confidence as a Speaker (PRCS). One of the most frequently used self-report measures of public speaking anxiety symptomatology (i.e., cognitions, feelings, and behaviors) is the Personal Report of Confidence as a Speaker questionnaire

(PRCS; Paul, 1966; Fremouw & Breitenstein, 1990). This self-report instrument is designed to assess both fear and confidence about speaking in front of others. In their study of socially anxious individuals suffering mainly from public speaking anxiety, Heimberg et al. (1985) found statistically significant reductions at posttest (with CBT). No effect size was reported by Heimberg et al. (1985); however the group average score fell within the normal range, as assessed by Paul's (1966) cutoff score of 16. Lawn et al. (1994) obtained similar results for CBT involving graduated exposure and feedback. The Personal Report of Confidence as a Speaker scale (Paul, 1966) was administered at the initial interview, at pre-treatment, at post-treatment, as well as at 3-month follow-up, and was used as a dependent variable in hypothesis 3.

The Personal Report of Confidence as a Speaker scale (Paul, 1966) was used in the present study as an indicator of public speaking anxiety. This scale includes 30 true-false items that assess both fear and confidence about speaking, including before, during, and after a speech (see Appendix F). Half of the 30 items are keyed "true" and half "false" for experienced public speaking anxiety, yielding a single score, which varies between 0 (*no fear*) and 30 (*extreme fear*). Higher scores therefore indicate greater anxiety symptomatology. Items measure cognitive, physiological, and behavioral responses experienced during the most recently delivered speech. No definite criterion for clinical level has been defined, but cut-offs vary between 16 (Paul, 1966) and 20 (Jones, Phillips, & Rieger, 1995). Paul's (1966) normative data yielded a mean of 11.6 (*SD* = 5.90) for 523 non-clinical individuals, and a mean of 20.6 (*SD* = 3.31) for 98 individuals from a clinical sample. Phillips, Jones, Reiger, and Snell (1997) have updated normative data for non-clinical individuals. The average score of 1109 college students was 14.24

(*SD* = 7.76). In their treatment study in which 5 out of 7 participants had public speaking anxiety, Heimberg et al. (1985) obtained mean scores at pretest that were 24.43 (*SD* = 4.39) and 16.71 (*SD* = 6.82) at posttest. Lawn et al. (1994) obtained a pre-test average of 23.8 (*SD* = 4.5) and post-test of 15.1 (*SD* = 6.5) with 9 participants suffering from public speaking anxiety. When comparing the scores in relation to gender, race, age, and grade-point average, they found no statistically significant between-group differences. Because norms developed by Phillips, Jones, Rieger, and Snell (1997) are recent and developed on a large sample, a cutoff of 20 was used for one of the criteria of clinical significance, based on those norms.

Daly (1978) provided some information regarding validity and reliability. He found that the PRCS had an internal consistency (Cronbach's alpha) of .91, and that it was associated with 12 other measures of speech and social anxiety, with correlations ranging from .52 to .97, providing support for convergent validity.

Social anxiety diary. In order to obtain the client's reaction in his or her own naturalistic environment and maintain the realism of the stimulus situation, self-monitoring forms have been used to record anxiety levels (e.g., Heimberg et al., 1990), and mean weekly frequency and duration of social encounters (e.g., Taylor, Woody, Koch, et al., 1997). Both self-monitoring strategies have presented some challenges, including lack of sufficient amount of data and lack of time series data.

In order to gather client's social anxiety in his or her own naturalistic environment and solve the problem of insufficient data, participants in the present study recorded their anxiety in naturally occurring social experiences in diaries on a daily basis. For days where there was no social encounter, participants rated their expected social anxiety. The

social anxiety diary was completed daily during baseline, treatment, post-treatment and daily during one week at 3-month follow-up. Social anxiety indicators were ratings of expected and actual anxiety for three situations (high, moderate, and mild).

The following information about social experiences was recorded in the diary: (a) date, (b) maximum level of anxiety during a difficult social anxiety situation (situation #1) on a 0 (*no anxiety, calm, relaxed*) to 100 (*very severe anxiety, worst ever experienced*) scale, (c) maximum level of anxiety during a moderate social anxiety situation (situation #2) on a 0 to 100 scale, (d) maximum level of anxiety during a mild social anxiety situation (situation #3) on a 0 to 100 scale, and (e) type and dosage of medication (see Appendix F). The difficult, moderate, and mild situations refer to idiosyncratic social anxiety situations identified collaboratively by each participant and the therapist. The situations were chosen based on their frequent occurrence and on the amount of anxiety they cause. Only three situations were assessed in order to keep the demand on the participants reasonable. Daily maximum level of anxiety for each of the three anxiety situations was used as an indicator of severity, similar to what has been done in previous treatment studies (e.g., Taylor, Woody, Koch, et al., 1997). Although psychometric properties of self-monitoring in social anxiety have received little attention, self-monitoring diary forms have been used and recommended in assessment research (McNeil et al., 1995). The format used in the present study further develops the self-monitoring forms included in Hope et al.'s (2000) standardized treatment package for social phobia. Psychometric properties of this instrument have not been examined, so in the present study it was used to address an exploratory research question.

Cognitions. Four measures were used to assess change in cognitions: the Public Self-Consciousness Subscale (PSCS; Scheier & Carver, 1985), the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969), the Attributional Style Questionnaire (ASQ; Peterson et al., 1982), and the Social Interaction Self-Statement Test (SISST; Glass et al., 1982). They each measure different aspects of the cognitions experienced by socially anxious individuals. These measures were assessed at the initial interview, six times during treatment (at sessions 1, 3, 5, 7, 9, and 11), at post-treatment, and at 3-month follow-up.

The cognitive tendency to monitor aspects of oneself that are open to public scrutiny have been assessed using the Public Self-Consciousness Subscale of the Self-Consciousness Scale Revised (PSCS; Scheier & Carver, 1985; Taylor, Woody, Koch, et al., 1997). The revised version is appropriate for non-college population (Scheier & Carver, 1985), and was used in the present study. The experience of public speaking anxiety presupposes a focus on the public self (qualities of the self from which impressions are formed in other people's eyes), which includes one's overt behavior, mannerisms, and expressive qualities. The Public Self-Consciousness Scale measures the tendency to monitor those aspects of oneself that are exposed to public scrutiny (see Appendix G).

The Public Self-Consciousness subscale includes 7 items, rated on a four-point scale (0 = *not at all like me*, 3 = *a lot like me*). Scores range from 0 to 21, with higher scores indicating higher public self-consciousness. Cronbach's alpha have been acceptable (e.g., .84; Scheier & Carver, 1985). Test-retest reliability conducted with 135 respondents (college undergraduates) with a 4-week interval was .74, which suggests

reasonable stability across time. Concurrent validity was obtained by correlating the revised form with the original. The Public Self-Consciousness subscale yielded a correlation in the low to mid .80s with the original scale.

Norms obtained with 213 undergraduate men and 85 undergraduate women were, a mean of 13.5 (*SD* = 4.2) and 14.2 (*SD* = 4.7), respectively. When comparing cognitive restructuring and associative therapy, Taylor, Woody, Koch, et al. (1997) obtained a mean of 17.2 (*SD* = 4.3) and 18.1 (*SD* = 2.2) at pretreatment, and 15.5 (*SD* = 4.3) and 17.5 (*SD* = 2.6) at post-treatment.

The Fear of Negative Evaluation (FNE; Watson & Friend, 1969) scale has been identified as the most widely used questionnaire that is suitable for the assessment of worry about negative evaluation by others (Elting & Hope, 1995; Heimberg, 1994). Leary's (1983) short format makes it amenable to repeated administrations and was used in the present study. The Fear of Negative Evaluation (Watson & Friend, 1969) has been associated with meaningful clinical change (Heimberg et al., 1990), and it has been suggested that it measures both critical and common features of social anxiety (Elting & Hope, 1995). It has been observed that the Fear of Negative Evaluation scale tends to yield smaller effect sizes compared with other measures of social anxiety such as the Social Phobia and Anxiety Inventory (Taylor, Woody, McLean, et al., 1997). However, using the original format, Bates and Clark (1998) observed a clinically significant decrease on a single case of a socially anxious individual.

The 12-item short form of the Fear of Negative Evaluation scale assesses the tendency to worry about negative evaluation using a 5-point Likert scale (1 = *not at all characteristic of me*, 5 = *extremely characteristic of me*). Correlations between the long

and short versions are high (e.g., $r = .96$) (Leary, 1983) (see Appendix G). Scores range from 12 to 60, with higher scores suggesting higher fear of negative evaluation.

With a sample of 150 undergraduate participants, a mean of 35.7 ($SD = 8.10$) was obtained Leary, 1983). The short form has an interitem reliability of .90, and four-week test-retest reliability of .75 (Leary, 1983). Construct validity is good, as the short form correlated with the Social Avoidance and Distress scale (Watson & Friend, 1969) at .35. This low correlation is expected because the Social Avoidance and Distress and the Fear of Negative Evaluation do not measure the same construct. However, the Fear of Negative Evaluation scale includes a combination of items focused on cognitions and emotional distress. In order to use the Fear of Negative Evaluation as a fear-related cognition measure, four items (items #3, 5, 6, and 10) related to emotional distress were deleted (see Taylor, Woody, Koch, et al., 1997). Psychometric properties of the 8-item modified measure obtained with this procedure are not available, but the changes reflect an apparently more targeted instrument (Taylor, Woody, Koch, et al., 1997), which will be referred to as Fear of Negative Evaluation – Modified (FNE-M).

The Attributional Style Questionnaire measures attributional styles common to many disorders, and more specifically those associated with social anxiety. It is the most widely used measure of attributional style (Elting & Hope, 1995). Heimberg et al. (1985) reported that individuals who received CBT for social anxiety showed significant changes on the Attributional Style Questionnaire (ASQ; Peterson et al., 1992) attributional dimensions of internality (5 out of 7 participants suffered from public speaking anxiety). Heimberg et al. (1985) found that pre-test scores on the Internality scale averaged 5.10 ($SD = 0.56$) and post-test scores were 4.17 ($SD = 0.43$).

The Attributional Style Questionnaire (Peterson et al., 1982) contains 12 hypothetical events, 3 of which describe aversive social events and were used in the present study (see Appendix G). Participants are asked to provide, through free response, one major cause of the event. For each cause, participants are asked to rate the attribution (internal or external) on a 7-point bipolar scale. The sum of ratings for the three events yields the tendency to make internal attributions for aversive social events. Scores vary between 3 and 21, with higher scores corresponding to higher tendency toward self-blame. In the full questionnaire, dimensions of stability and globality are also rated. However, internality only was rated in this study, as it is the dimension that is most specifically related to social anxiety. Five-week test-retest correlations for internality were $r = .58$ for good events, and $r = .64$ for bad events. Reliability for internality yielded a Cronbach's alpha of .46 (Peterson et al., 1982), which is low. Nevertheless, it represents a way to gather some information about the tendency to make internal attributions (self-blame). The three aversive social events items rated on the internality scale were administered repeatedly in the present study, more specifically at the initial interview, six times during treatment (at sessions 1, 3, 5, 7, 9, and 11), at post-treatment, and at 3-month follow-up.

Negative and positive self-statements. The Social Interaction Self-Statement Test (SISST; Glass et al., 1982), as adapted by Beidel, Turner, and Dancu (1985), was administered during the impromptu speech task. This 30-item instrument assesses positive and negative cognitions during social interactions. Participants rated on a 5-point scale (1 = *hardly ever* to 5 = *very often*) the frequency of each of 15 positive thoughts and 15 negative thoughts that occurred just before or during the speech (see Appendix G).

The positive and negative cognitions subscale scores range from 15 to 75. The Social Interaction Self-Statement Test was administered at four points: (a) once at the initial interview, (b) once at pre-treatment, (c) one week after treatment, and (d) at 3-month follow-up. Previous studies have supported the validity of the Social Interaction Self-Statement Test for assessing cognitions during a speech (Beidel et al., 1985).

Working alliance. The Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) is a self-report instrument for measuring the quality of alliance, and is based on Bordin's (1979) conceptualization. The inventory has received considerable empirical scrutiny, and has been identified in a meta-analysis of 79 studies as the scale used the most often for measuring alliance (Martin et al., 2000). The Working Alliance Inventory was administered repeatedly in the present study, more specifically, six times during treatment (at sessions 1, 3, 5, 7, 9, and 11).

The Working Alliance Inventory is a 36-item scale formed of three subscales: (a) collaborative and affective bond between therapist and client; (b) agreement on treatment goals; and (c) agreement on treatment tasks [examples of items include "*I feel uncomfortable with the therapist*" (item #1), "*My therapist and I agree about the things I will need to do in therapy to help improve my situation*" (item #2), and "*I am worried about the outcome of these sessions*" (item #3)]. Items are rated on a 7-point Likert scale (1 = *never*, 7 = *always*). Scores on each subscale range from 12 to 84, and total score ranges from 36 to 252, with higher scores indicating a stronger alliance. The total score was reported at each assessment point. Horvath and Greenberg (1989) have developed patient-, therapist-, and independent observer-rated versions of the Inventory. Because the client's perspective is especially predictive of outcome (Lambert & Bergin, 1994;

Orlinsky et al., 1994), the client scale was used in the present study. The client-rated form total score internal consistency (Cronbach's alpha) has been estimated at .93. Convergent validity was suggested by the strong correlations between Working Alliance Inventory subscales and various indexes of therapeutic outcome (Horvath & Greenberg, 1989). Lesser associations between the Working Alliance Inventory and other sources of information that share only methodological features with the inventory suggest good discriminant validity (Horvath & Greenberg, 1989).

Client satisfaction. A modified version of the Client Satisfaction Scale (CSS; Tracey & Dundon, 1988) was used. Satisfaction was measured over time (at sessions 1, 3, 5, 7, 9, and 11), so that measurement of satisfaction went beyond initial impressions, where the novelty of the technology may result in a positive bias or the opposite, an uneasiness.

The original version of the scale was developed to gain a session by session rating of the client's satisfaction with treatment, and included five items, rated on a 7-point Likert-type scale (ranging from 1 = *very strongly disagree* to 7 = *very strongly agree*). The fact that the modified Client Satisfaction Scale (Tracey & Dundon, 1988) has emerged from face-to-face treatment and was modified and used in at least one study of psychotherapy via videoconferencing makes it the preferred instrument. The authors obtained an internal consistency of $r = .94$, and a one-week test-retest reliability of $r = .64$ for the scale. The measure yielded an average correlation of $r = .60$ with the Follow-Up Questionnaire on Individual Counselling (Tracey & Ray, 1984), suggesting concurrent validity. Two items added by Day and Schneider (in press) were also included in this study because they provided another perspective through which to assess satisfaction

with service. They refer to the willingness to use the service again, and the willingness to recommend this mode of delivery to a friend (see Appendix H). Therefore, the final version includes seven items. Scores are obtained by averaging the answers to each of the seven items (after reversing the score of items 1, 5, and 6), and range from 1 to 7, with higher scores indicating higher satisfaction. Day and Schneider (in press) reported average client satisfaction of 5.97 for the videoconferencing group, which was similar to face-to-face ratings (e.g., Tracey & Dundon, 1988).

Client comfort. Because the Distance Communication Comfort Scale (DCCS; Schneider, 1999) was developed especially for the context of individual psychotherapy via videoconferencing, it is the measure of choice. The Distance Communication Comfort Scale is a 36-item scale that measures the degree of comfort with audio, video, and face-to-face communication contexts in an individual counselling situation. Only the comfort with videoconferencing subscale was used (DCCS-V; see Appendix H). It includes 12 items, scored on a 7-point rating scale (1 = *strongly disagree* to 7 = *strongly agree*). Seven scores are reversed. Scores are obtained by averaging the answers to each of the 12 items, and range from 1 to 7, with higher scores indicating higher comfort. Day and Schneider (in press) reported average client comfort of 5.13 for the videoconferencing group. In the present study, comfort was measured over time (at pre-treatment, and at sessions 1, 3, 5, 7, 9, and 11).

Reliability (Cronbach's alpha) for the video subscale was $r = .82$ (Schneider, 1999). Because it is possible that personality traits such as Extraversion or Agreeability may explain an individual's interest in treatment via videoconferencing or amenability to different modes of treatment, Schneider examined the extent to which the Distance

Communication Comfort Scale differed from the NEO (Costa & McCrae, 1992). The results of discriminant analysis suggested that the Distance Communication Comfort Scale measured unique constructs when compared with the NEO.

Clinical significance: Endstate functioning. Turner, Beidel, Long, Turner, & Townsley (1993) developed an endstate functioning index (i.e., Social Phobia Endstate Functioning Index) in order to provide an indicator of the overall improvement of participants over the course of treatment. This index includes individual outcome measures and cutoff scores based on performance of a non-clinical population. Measures have good psychometric properties and cover a range of instruments. The index is composed of: Social Phobia and Anxiety Inventory (Turner et al., 1989), Fear Questionnaire (Marks & Mathews, 1979), Clinical Global Impressions scale (CGI; Guy, 1976), speech length during a speech task, and participant's rating of their level of distress during the impromptu speech task on a 9-point SUDS rating scale. Because the Social Phobia and Anxiety Inventory (Turner et al., 1989) and the Fear Questionnaire (Marks & Mathews, 1979) are general social anxiety measures and therefore may not reflect changes in specific social fears, they were not used in the present index. They were replaced by the Personal Report of Confidence as a Speaker measure (Paul, 1966). Because this modification corresponds conceptually with the initial content of the index, it can be construed as a modified version social phobia endstate functioning index.

High endstate functioning in the present study is defined as the presence of (a) Personal Report of Confidence as a Speaker measure (Paul, 1966) score of less than or equal to 20; (b) Clinical Global Impressions scale (Guy, 1976) ratings less than or equal to 2; (c) speech duration greater than or equal to 5.7 minutes; and (d) SUDS ratings

during the speech less than or equal to 55. All cutoff scores except the Personal Report of Confidence as a Speaker measure (Paul, 1966) are based on the performance of a normal control group of 21 individuals matched on the basis of gender, age (within 5 years), and education to a group of socially anxious individuals (Turner et al., 1993). The Personal Report of Confidence as a Speaker measure's (Paul, 1966) cutoff score is based on performance of non-clinical individuals (Phillips et al., 1997). Scores equivalent to one standard deviation from the mean of the controls (in the direction of dysfunctionality) served as the criterion cutoff for each measure. Individuals who achieve that score or better receive 1 point. The total score ranges from 0 to 4, with higher scores reflecting higher functioning. Total scores ranging from 0 to 1 are classified as low endstate status, those receiving 2 or 3 are classified as moderate endstate status, and those receiving 4 are classified as high endstate status. In the present study, this index was used to determine each participant's clinical level of functioning at post-treatment and at 3-month follow-up.

The Clinical Global Impressions Scale (CGI; Guy, 1976) provides a clinician's rating of the severity of mental disorder, and is part of the social phobia endstate functioning index developed by Turner et al. (1993) that was used to determine clinical significance (Jacobson & Truax, 1991). It was administered twice, at post-treatment and at 3-month follow-up. The CGI is frequently used in pharmacological treatment studies, which is why Turner et al. (1993) incorporated it in their endstate index. They argue that this allows comparisons of results across studies.

The CGI is a 7-point single rating scale designed to determine the severity of the presenting complaint (see Appendix I). The scores range from 1 (*normal, not at all ill*) to

7 (*among the most extremely ill patients*), with higher scores indicating greater pathology. Turner et al. (1993) obtained an interrater reliability (kappa) of .70 with a sample of 42 individuals, including 21 individuals with social anxiety disorder and 21 individuals who had not received any DSM diagnostics. In administering the scale, the evaluator (i.e., a diagnostician from the University of British Columbia Hospital, Anxiety Disorder Unit, who was not associated with the project in any way) did not receive any information regarding the participants' treatment status.

Treatment Integrity

Medication and other psychoactive substances intake. Medication intake was assessed within the self-monitoring diary (see Appendix F) because a change in the type of medication or a sudden increase in medication can affect anxiety symptoms (Bradberry, 1983). As much as possible, participants were asked to keep the dosage and the type of medication they were using while participating in this study constant. However, participants were asked to record in their diary the number and type of pills consumed daily, so that any change in the type of medication they were using in order to deal with their anxiety would be recorded.

Treatment credibility and expectancies for improvement. Treatment credibility has been found to be related to treatment outcome. It was assessed with four questions adapted by Hope et al. (2000) from the Borkovec and Nau's (1972) Reaction to Treatment Questionnaire (see Appendix I). Each question is rated on two 1 to 10 scales (1 = *not logical*; 10 = *very logical*; 1 = *not confident*; 10 = *very confident,* respectively), and the scores are averaged to produce a general credibility score ranging from 1 to 10. Higher scores indicate a more credible treatment. A research assistant administered this

scale, and participants were told that their ratings would remain confidential. This measure of treatment credibility was administered after the fourth session of treatment, as has been done in previous treatment studies (e.g., Taylor, Woody, Koch, et al., 1997). The average treatment credibility score was reported for each participant.

Therapist's observations and participants' comments. Therapist's observations about the treatment process were informally recorded throughout treatment. Participants' comments about treatment were collected in a telephone post-treatment interview (see Appendix I), conducted by a senior doctoral student not associated with the project in any way. The therapist observations and clients comments were gathered to help understand participants' responsiveness to treatment and to guide future research. The attrition rate and reason for attrition were recorded in a telephone interview (see questions in Appendix I) in order to learn more about possible selection bias in favor of those likely to be positive about teleconsultation (Mair & Whitten, 2000).

Research Design and Procedures

The purpose of this study was to evaluate the efficacy of CBT provided via videoconferencing to individuals suffering from social anxiety disorder, specifically public speaking anxiety. The original plan was to conduct a single-case design with multiple baselines across participants, but this was modified to a single-case design with replications across cases.

The single-case design with multiple baselines involves a detailed description of each participant, and repeated, systematic measurement of dependent variables before, during, and after the manipulation of an independent variable (Franklin, Allison, & Gorman, 1997; Hilliard, 1993). Each participant's baseline data acts as a control

condition (i.e., the baselines provide an estimate of what participants would have scored if they had not received treatment, which represents a no-treatment point of comparison or a control). Different lengths of baselines contribute to the strength of the demonstration that the intervention is responsible for change. When similar patterns are observed across different baselines with the introduction of the treatment (independent variable), this argues that the intervention, rather than extraneous events, is responsible for change. Such a design allows for causal inference.

In the present study, socially anxious people did not tend to change early in treatment; therefore changes were not observed immediately after starting treatment. One option would have been to wait until change from baseline is observed in order to bring another case into the treatment phase. This was not done for two reasons. First, as stated earlier, participants do not tend to change immediately after starting treatment. Second, the baseline measure of social anxiety (i.e., daily self-monitoring of anxiety ratings in actual and expected social situations) was exploratory. Those two reasons could have led to a long wait for research participants to start treatment, leading to high attrition rate. The design was therefore modified to a single-case quasi-experimental ABC design with replications across cases, involving an initial assessment (at initial interview), a baseline period of 3 weeks (over a 3-week or 5-week period), followed by 12 1-hour individual weekly sessions of treatment, a 1-week post-treatment assessment, and 3-month follow-up assessment (see Figure 1 for details of how many times participants were seen and the frequency of data collection).

Initial Assessment

Participants who answered recruitment notices were contacted by telephone for pre-selection and scheduled for a face-to-face diagnostic interview. If they met the criteria, participants then completed the consent form describing the different phases of the study, after reading it and having it explained to them (see Appendix J). They also completed the demographics questionnaire (see Appendix J). Next, they completed the paper-pencil measures (i.e., public speaking anxiety, public self-consciousness, fear of negative evaluation scale, internal attributions, self-statement), performed the speech task, and received more details regarding the study procedures. They also received information regarding how to complete the daily social diary and were given training in the use of the SUDS.

Participants were informed of the level of confidentiality provided by this mode of delivery (comparable to confidentiality of face-to-face meetings), as well as three limits to this confidentiality, which are the same as these applied when treatment is provided face-to-face: (a) if the participant represents a danger for him or herself or others; (b) if there is suspicion of child or elder abuse; (c) if the therapist is required by the court to provide information (subpoena). If they did not consent to any part of the treatment or if they did not meet the diagnostic criteria, they were not included in the study and an appropriate referral was made (see Appendix J).

Baseline Phase (Pre-Treatment)

Following intake evaluation, participants were randomly assigned to one of the two baseline durations (in order to control for instrumentation and maturation effects). For 4 participants, treatment was initiated after a 3-week baseline assessment period. For

another 4 participants, treatment was initiated after a 5-week baseline assessment period. Assignment to 3-week or 5-week baseline was done randomly. The length of baseline was comparable to previous social anxiety treatment studies (e.g., Heimberg, 1985; Taylor, Woody, Koch, et al., 1997). It was initially chosen as an appropriate length, because it was enough time to see whether change would occur, but still remained within practical time constraints. The second group was expected to begin treatment when the 3-week group demonstrated changes on the initiation of treatment. However, because exploratory measures were used and their ability to measure change was not known, treatment for the second group was started after 5 weeks, regardless of whether the first group showed changes once treatment started. During the baseline period, participants self-recorded information about their social encounters. At the end of each week, participants mailed their diaries to me in stamped self-addressed envelopes. Because there was a delay between the initial interview and the beginning of baseline, the speech task and some paper-pencil measures (i.e., public speaking anxiety, self-statement) were repeated, and comfort with videoconferencing was assessed prior to starting baseline (pre-treatment).

Treatment Phase

The treatment consisted of Heimberg's (1991, 2001) CBT for social anxiety disorder, but was administered individually. Therapy followed Heimberg's (1991, 2001) 178-page manual (available from me on request) that outlines CBT for social anxiety disorder, and was faithful to the group approach (i.e., volunteer research assistants in the therapist's venue and the research assistant in the client's venue participated in sessions in order to simulate an audience). The treatment protocol integrates two main

components: (a) training in cognitive restructuring, and (b) exposure to anxiety-provoking situations. For a treatment overview, see Appendix K.

The manual describes the goals and strategies for each session. Tasks and application were individualized (as suggested in the manual) in order to be clinically sensitive to each participant's specific anxiety-provoking situations (Kendall, Chu, Gifford, Hayes, & Nauta, 1998). Treatment extended over 12 sessions, and included a relapse-prevention training period. Each therapy session lasted 50 minutes, and included exercises in cognitive restructuring and exposure. The first few minutes of the first three sessions were taken to allow each participant to develop comfort with the medium by having an informal conversation (similar to usual clinical practice). Sessions were held once a week, with adjustments for holidays, illness, and schedule conflicts.

Treatment integrity. Treatment integrity is defined as the degree to which treatments are implemented as intended (Gresham, 1997). It has direct implications on the empirical demonstration that observed changes are functionally related to manipulated changes in the environment, and on whether or not replication is possible. In order to insure treatment integrity, at least two elements are needed: specifications of the experimental procedures and assessment of whether or not the procedures are implemented as planned.

The experimental procedures are detailed in the treatment manual. This helped standardization of the therapist's administration of treatment across participants and facilitates replication by other investigators. Treatment sessions were videotaped in order to evaluate the extent to which the therapist adhered to the designated treatment approach, and in order to provide supervision.

A registered psychologist trained in the provision of CBT assessed treatment integrity. A checklist based on the treatment manual was used (see Appendix K). The rater completed the checklist by watching three 5-minutes of randomly selected segments of every second treatment sessions (including each participant). Integrity was calculated across days of treatment (component integrity). Because feedback was provided to the therapist, this also decreased the risk of therapist drift (Gresham, 1997).

Demand characteristics. Demand characteristics can bias research results when participants, making inferences about the purpose of the experiment, respond in accordance with the perceived purpose (Orne, 1962). This leads to experimental outcomes that may not predict accurately treatment results in non-experimental contexts. In clinical (non-experimental) work with socially anxious individuals, demand characteristics are often present, that is, socially anxious clients tend to try to please their clinician. This is understandable given the disorder they suffer. In response to this dynamic, it is common clinical practice not to simply accept positive reports from client's exposure exercises for example, but to encourage them to give an honest report and provide examples. The rationale is given that this is how the clinician will best be able to help them and how they will benefit the most from treatment. By encouraging an honest report and stressing why it is better for them to do so, participants may not color their answers in order to avoid revealing characteristics that they consider undesirable. It is therefore possible that demand characteristics may not represent a major impediment in generalizing from a research context to a clinical context, when working with a socially anxious population.

Three procedures inherent to the present design helped reduce the demand characteristics. First, an independent assessor (research assistants at the client location) administered most measures and told the participants that their ratings would remain confidential. Second, measures collected at post-treatment and at 3-month follow-up were collected at a time when treatment was terminated, in a context where the participant would probably not be as influenced by their perception of what is appropriate or expected. Third, participants were given the opportunity to evaluate their experience in treatment from a number of perspectives via a telephone interview conducted by an independent assessor after all forms were completed after the 3-month follow-up (see Appendix I for the questionnaire). Open-ended questions focusing on treatment and videoconferencing were explored with each participant and their honest responses were requested.

Missed sessions. If a participant missed a session, an alternate session was planned within the following week. All missed sessions were replaced for each participant, resulting in each participant attending 12 CBT sessions.

Post-Treatment Phase

Participants met with the therapist to perform the speech tasks 1 week following the treatment phase, and were administered the CGI and partial SCID. Diary forms and questionnaires were provided to participants at their appointment, along with stamped envelopes, and participants were instructed to complete the daily diary for 1 week, complete the questionnaires, then return the material by mail in 1 week. Participants' whose material was not received within 10 days were given a telephone call in order to

verify whether they mailed their material and to encourage them to do so (all participants returned their material within 10 days).

Three-Month Follow-up Phase

Three months following the end of treatment, participants met with the therapist to perform the speech tasks, and were administered the CGI and partial SCID. Diary forms and questionnaires were provided to participants at their appointment, and participants were instructed to complete the daily diary for 1 week, complete the questionnaires, then return the material to the researcher in 1 week (2 participants returned the material to me at the Counselling Psychology department; 3 participants accepted my offer to pick up the material). All participants returned their material on time. Telephone interviews to gather participants' comments were performed after the therapist met with the participants for the last time.

Therapist

I am a 30-year old female doctoral student in Counselling Psychology with 6 years of previous clinical experience with CBT for anxiety disorders (e.g., stress, panic disorder, agoraphobia, social anxiety). I meet the following criteria, which are in line with Heimberg's (1991, 2001) criteria for therapists: (a) sufficient experience in the role of therapist; (b) thorough knowledge of social anxiety disorder; (c) familiarity with the procedures of CBT for social anxiety disorder. In addition, I have received supervised training in providing CBT via videoconferencing during 13 sessions with one individual with generalized social anxiety disorder, and specific training in videoconferencing (see Technology Training section below).

Heimberg (1991, 2001) recommended mixing male and female therapists whenever possible in group treatment, as socially anxious individuals are sometimes more anxious in the presence of the opposite sex. This was not done in the present study because individual treatment was provided. Participants were asked if their anxiety was impacted by the presence of male or female audience members, and only Sami indicated that he was more anxious in the presence of a female audience. This was not considered to be a problem, because he would have opportunities to be exposed to a female therapist and female audience.

I conducted a pilot study offering CBT which took place between October 2000 and January 2001 in order to evaluate the practical aspects of a videoconferencing application of an individual treatment protocol (Heimberg, 1991, 2001) for social anxiety disorder. The participant was a 24-year-old single Caucasian male (graduate student) who lived with his parents. He responded to a poster regarding the study, deciding to seek treatment for social anxiety. Details of the pilot study are presented in Appendix L.

Findings of the pilot study confirmed the importance of in-session exposure, and the need to use volunteer audience members in exposure situations when people are not readily available at either end of the videoconference (i.e., for the pilot study, no research assistants or volunteers were available, making in-session exposures difficult). In addition, an electronic white board used to show written documents to the client, to demonstrate the CBT model to the client, and to apply other cognitive techniques (e.g., pie chart) was determined a useful technique to supplement the manualized treatment (i.e., to replace the use of clipboards as writing surfaces).

The quality of collaboration (i.e., reliability, resourcefulness, communication, interpersonal, observational, and organizational skills) with the research assistant at the client's location was a crucial component of the successful implementation of treatment. No modification to the treatment procedures (i.e., cognitive restructuring and exposure; Heimberg, 1991, 2001) was made as a result of the pilot offering.

Locations

Geographical distance and a videoconferencing system were used to provide therapy. All clients received treatment on the University of British Columbia campus. The clinician was located at the UBC Telestudios (2329 West Mall), and clients were located at the UBC Mental Health Evaluation and Community Consultation Unit (Mheccu; 2250 Wesbrook). The UBC Telestudios is a medium-size conference room, similar to what would be available to professionals in major city centers, whereas Mheccu has a small-size conference room, similar to what small communities might have. Videoconferences were displayed on a large monitor located at the front of the room. Client and clinician sat approximately 8 feet from the monitor in their respective locations. The two sites offered reliable electronic equipment and space conducive to conducting the treatment sessions (e.g., promote a sense of closeness and privacy, Hodges, 2000).

In case of emergency, I provided support either by phone and I was prepared to do so face-to-face, as UBC Telestudios is walking distance from Mheccu. Face-to-face support was not needed. Technical expertise was provided by UBC Telestudios and Mheccu, in the form of advice, consultation, coordination of operations, and maintenance of videoconferencing equipment.

A research assistant was at the client's location. Two research assistants (Danielle Conrad and Debbie Plomp) were involved over the course of the treatment study. They each demonstrated high levels of reliability (i.e., they always arrived enough time in advance to prepare the videoconferencing room and establish the videoconferencing communication with me), resourcefulness (i.e., they could deal with minor problems independently), communication skills (i.e., they communicated to me any information they thought I should know), interpersonal skills (i.e., they interacted with clients in a professional way), as well as strong observational skills (e.g., they identified that one client showed signs associated with substances). In addition, they were both very organized, which was necessary in order to transmit the right documents to the right clients at the right session.

Technology

The videoconferencing technology was selected in accordance with the technology presently used by the two centers involved, which reflects North American market trends in 2002. In each of the videoconferencing rooms, the cameras were located on top of the television monitors. The UBC Telestudios site was equipped with a PictureTel 4500, with a 36-inch television monitor. The Mheccu site was equipped with a Polycom Viewstation 512 MP with a 27-inch television monitor. The connection used was 384 Kbps (6 ISDN lines at 64 Kbps). I saw the client on my screen, with myself in a small window in the lower right corner of the screen. The client only saw the clinician on his or her screen, in order to limit distractions. Each therapy session was videotaped for supervision purposes from the clinician's location, at UBC Telestudios. The videotapes were identical to what the client and therapists see of the other person on the screen (i.e.,

waist up shots). As indicated in the consent form, the videotapes were identified by a code, and were kept in a locked cabinet.

I made every effort to know the technology. In case of technological failure during therapy sessions, the client could ask the research assistant located in an adjacent room for assistance, and the clinician could telephone the research assistant and/or the client. Both client and therapist had a phone in their respective videoconferencing room. If technical difficulties could not be resolved, I was prepared to schedule another appointment at the latest the following week. There were three instances when we had technological failures, which each lasted 2 to 5 minutes. In the first instance, one of the ISDN lines stopped working 5 minutes before the end of the session, so we finished the session over the telephone (client was Sami). In the second instance, the communication was interrupted during the session, and the research assistant helped me reconnect (client was Mike). In the third instance, the client (Sami) waited at the most 2 minutes and I re-established the connection.

Technology Training

I received training in the use of videoconferencing technology to deliver psychological services. The training was in the form of sessions (approximate total of 5 hours) in which I was instructed in the use of the technology, had clinical discussions, and role-played psychotherapy using videoconferencing. The training was provided, in part, at the Pacific eHealth Innovation Center (Honolulu, HI, August 2000) during a 5-day site visit, and, in part, at the UBC telestudios. The main purpose of this training was to increase my comfort level with technology, and eliminate as many of the novelty effects as possible (desensitize to distractions). Training lasted approximately 10 hours.

The length and type of training were similar to the training of other clinicians providing telehealth services (S. Miyahira, personal communication, August 16, 2000; L. Morland, personal communication, August 17, 2000). Additional assistance was available to me throughout treatment in the form of discussions with a senior clinical expert in the use of videoconferencing for psychological services (Dr. B. Hudnall Stamm, Idaho State University).

Data Analyses

Completion Rate and Missing Data

The participants completed all behavioral tests (a score of 100 SUDS for anxiety and score of 0 minute for time was attributed to participants who were too anxious to give a speech at any assessment point), clinician interviews, and questionnaires. The self-monitoring completion rate for the daily diaries was high. Two participants (Mike and Sami) had no missing self-monitoring data. The other three participants missed between 1 and 11 days of the 77 days of self-monitoring, due to sickness or winter holidays. All of the missing data occured during the treatment phase and not during baseline or post-treatment assessments. Zakaria missed 3 days in week 7 of treatment, 4 days in week 9, and 4 days in week 11 (total of 11 days). Nella missed 2 days in week 3 of treatment and 3 days in week 9 (total of 5 days). Finally, Claudel missed 1 day at treatment session 9. No action was taken to replace the missing data, because there was already a large amount of data available for both visual and statistical analyses. This amount of missing data could not be directly compared with that of other studies, because previous studies have not used self-monitoring of social anxiety in the same way. Some previous attempts at gathering self-monitoring data with socially anxious individuals (e.g., Heimberg et al.,

1990; Taylor, Woody, Koch, et al., 1997) have reportedly yielded an insufficient amount of data. This suggests that the amount of missing data in the present study is smaller than in previous studies.

Overall Strategy for Data Analysis

The data were analyzed visually, statistically, and clinically on an individual level to determine the efficacy of the intervention. Some group analyses were performed to provide an overall perspective on the visual analyses. These analyses were performed despite sub-optimal conditions, and effect sizes were reported as a reference for archival purposes. Statistical analyses were included because my goal was to explore the data from several perspectives. Thus, I used different methods to understand the data (i.e., visual, statistical, and clinical analyses). Moreover, group analyses using statistics discriminates chance events from non-chance events, which cannot be done through analysis of descriptive data. Specific characteristics of the data and assumptions that needed to be taken into account for each type of analyses are described below (for a summary of measures collected, nature of the data, total number of data points, and analyses for each measure, see Appendix B). Where there were inconsistent results between participants at different points in treatment and follow-up, an effort was made to suggest tentative explanations for the differences observed.

Analyses of hypotheses. The dependent variables for the three hypotheses (i.e., anxiety in speech task, duration of speech task, and public speaking anxiety) were measured at the initial interview, at pre-treatment, at post-treatment, and at 3-month follow-up and were analyzed with *t*-tests (SPSS program 10.0) for pre-planned orthogonal contrasts. A major problem with the present design is that it does not offer

sufficient power to detect change. Therefore, orthogonal contrasts were used in this sub-optimal situation, and effect sizes were reported as a reference for archival purposes. By bringing attention to effect sizes in the present study, valid information was reported despite the lack of power. In addition, previous studies that involved single-case designs have reported group analyses (e.g., Heimberg et al., 1985; Laberge, Gauthier, Coté, Plamondon, & Cormier, 1993). Although group analyses were used to test Hypotheses 1, 2, and 3, individual data were analyzed descriptively (means, standard deviations, illustrative figures); daily individual data were explored in response to question 1; and an endstate indicator of clinical significance was computed. Thus, these data complement one another.

Analyses of questions. The participants' scores for each data point on each of the dependent measures of the first question (self-monitoring of difficult, moderate, and mild social situations) were plotted on separate graphs and analyzed visually. Each participant was treated as a separate case, and analyzed individually.

Interpretation of graphic displays involves three general principles: (a) central location; (b) variability in the data; and (c) trend in central location (Franklin, Gorman, Beasley, & Allison, 1997). Therefore, central location was determined within phases and changes in central location between phases were analyzed as well. Variability in the data was determined by variation over time. Finally, trend in central location (linear and nonlinear) was analyzed both within and between different phases of data collection. Those principles guided visual analysis. In addition, careful attention was given to three constraints on analysis of graphs identified by Franklin, Gorman, et al. (1997): (a) cyclicity; (b) carryover effect; and (c) outliers. Cyclicity refers to behavior change

associated with timing systems, and carryover effect refers to the influence of one treatment phase on the next. The graphs were examined for outliers. No aberrant observations that were incongruent with other dependent measures taken from the same time series were found.

Interrupted time series analysis was used to explore Question 1. Variability in successive data points needs to be evaluated relative to changes in slope from one phase of the study to the other. Interrupted time-series analysis (Crosbie, 1993) controls for data that are not independent observations, that is, they are autocorrelated and provide a coefficient for the difference between the intercept and the slope of two consecutive phases having 5 or more data points.

Interrupted time-series analyses, using the ITSACORR software program (Crosbie, 1993) were performed on each participant's maximum level of anxiety during the expected difficult situation, the expected moderate situation, and the expected mild situation, as assessed with SUDS ratings. Data for anxiety in difficult, moderate, and mild situations included 21 (i.e., 3 weeks) data points for the baseline phase, 42 (i.e., 6 weeks) data points during treatment, and 7 (i.e., 1 week) data points respectively in post-treatment and 3-month follow-up.

Power analysis for interrupted time-series analyses was performed prior to obtaining the data using the power table developed by Friedman (1982; reprinted by Allison, Silverstein, & Gorman, 1997). In sample size computation, I balanced the desire for high power with the limits imposed by the intervention and what participants could realistically provide in terms of data. For Question 1, I performed three statistical tests. Because of the exploratory nature of this question, I conducted each test at an alpha of

.05. With a significance level (alpha) of .05, a power of .80, and effect size (*d*) of approximately 1.062 (as observed by Taylor, 1996 for combined cognitive restructuring and exposure), a sample size (total number of data points in two phases) of approximately 30 was required. In the present study, the baseline phase involved 21 data points, the treatment phase involved 42 data points, and the post-treatment phases of 1-week and 3-month follow-up each involved 7 data points. This means that comparisons between baseline and treatment involved 63 data points, and comparisons between treatment and post-treatment involved 49 data points, each yielding high power (i.e., 0.9). Comparisons between post-treatment and 3-month follow-up, however, involved 14 data points, yielding a low power (i.e., 0.5).

Data obtained on Questions 2 to 6 were analyzed for change over time using one-way repeated measures ANOVAs (SPSS program 10.0). Time effects included sessions 1, 3, 5, 7, 9, and 11. The dependent variables included public self-consciousness, fear of negative evaluation, internal attributions, negative and positive self-statements, working alliance, satisfaction, and comfort. Group analyses were performed despite sub-optimal conditions with a focus on effect sizes. In addition, individual data were analyzed descriptively (See Appendix R).

Individual participants' scores in public self-consciousness (Question 2; 9 data points), fear of negative evaluation (Question 2; 9 data points), internal attributions (Question 2; 9 data points), working alliance (Question 4; 6 data points), participant satisfaction (Question 5; 6 data points), and participant comfort (Question 6; 7 data points) were correlated with daily social anxiety over treatment using the Pearson correlation coefficient (SPSS program 10.0) in order to identify linear relationships.

Expected SUDS daily ratings for the mild situation were averaged in order to provide a score for each participant for each week during which the variable for Questions 2, 4, 5, and 6 were assessed over baseline, treatment, post-treatment, and 3-month follow-up. Data were also analyzed descriptively using scatter plots (Appendix M).

Participants' evaluation of treatment was collected in a telephone survey. Individual participants' answers were reported (dropouts and completers in Appendix N and S respectively), and the results were summarized descriptively.

CHAPTER IV – RESULTS

Overall, the results of this study suggest that there is some support for the efficacy of CBT via videoconferencing for socially anxious individuals.

Characteristics of the Sample

In order to determine the comparability of this sample with those of previous CBT studies for public speaking anxiety, the participants' pre-treatment scores were compared with those reported in other studies for public speaking anxiety. The Personal Report of Confidence as a Speaker questionnaire (Paul, 1966) was used for this comparison. This instrument measures public speaking anxiety and was chosen as a basis for comparison with previous studies because it is a widely used measure. The weighted grand mean (weighted according to sample size of each study) of pre-treatment scores from three previous studies (Heimberg et al., 1985; Lawn, Schwartz, Houlihan, & Cassisi, 1994; Paul, 1966) was 21.09 (*SD* = 1.22). The combined means of initial interview and pre-treatment obtained in the present sample was 26.20 (*SD* = 3.05). Confidence intervals (i.e., Mean +/- 1.96*SD*) for previous studies and the present study are therefore 18.70 – 23.48, and 20.22 – 32.18, respectively. The fact that intervals overlap indicates that participants in the present sample were suffering from a similar level of public speaking anxiety compared with previous studies samples.

The attrition rate obtained in the present study (3 out of 8 participants, 38%) is higher than that reported in other face-to-face treatment studies using exposure and cognitive restructuring (Taylor, 1996). Average initial interview and pre-treatment scores obtained by dropouts and treatment completers are shown in Table 2.

Table 2
Average baseline scores for dropouts and treatment completers

Participant	Status	Anx.	Time	Public Speak.	Negative Eval.	Attri-butions	Self-Conscious ness	Positive Thoughts	Negative Thoughts	Working Alliance	Satisfaction	Comfort
Zakaria	Completer	85.0	5.6	21.0	39.0	17.5	21.0	35.0	63.5	213.00	5.00	5.50
Mike	Completer	100.0	2.0	27.5	27.0	17.0	16.0	24.0	49.5	226.00	6.14	5.75
Nella	Completer	100.0	0.0	26.5	31.0	9.0	19.0	29.0	60.5	200.00	6.14	5.42
Claudel	Completer	67.5	1.8	29.0	33.0	17.0	13.5	23.5	63.5	202.00	5.57	6.75
Sami	Completer	97.5	2.3	27.0	36.0	16.0	21.0	32.0	62.0	216.00	4.29	4.92
Vu	Dropout	92.5	1.5	24.5	34.0	15.0	20.0	37.5	60.0	190.00	4.00	3.57
Maxim	Dropout	100.0	0.0	26.0	33.0	13.0	19.0	29.5	58.5	199.00	4.92	4.43
Alexander	Dropout	100.0	0.0	28.0	37.0	15.0	18.0	28.5	67.0	207.00	3.17	4.57

Note. Public speaking anxiety, social anxiety symptomatology, cognitions, and self-statements were measured at the initial interview and at pre-treatment. Working alliance, satisfaction, and comfort were measured at Session 1. Comfort was also measured at pre-treatment. C = Completer; D = Dropout; Anx. = Speech Anxiety; Time = Speech Task Time; Public Speak. = Public speaking anxiety.

The fact that means and ranges are similar suggests that dropouts and treatment completers were not different on the variables assessed at pre-treatment and after the first session. This suggests that for those who dropped out, social anxiety was not more or less severe. They had a similar perception of working alliance and satisfaction, but comfort appeared lower at the first session.

The Reason for Attrition telephone interview (Appendix I) was attempted with the three dropouts (Vu responded to the questions on the telephone, and Maxim responded to the questions on the questionnaire that was mailed to him due to unsuccessful attempts to reach him on the telephone; see Appendix N for details). The interviews allowed participants to comment about their experience in the study. The two dropouts who provided their comments are Vu and Maxim (Alexander went to Europe shortly after the onset of treatment).

Vu and Maxim reported being moderately and mildly satisfied, respectively (7 and 4, respectively, on an 11-point scale, 0 = *not satisfied*; 10 = *very satisfied*). Vu reported that scheduling was a problem, whereas Maxim reported frustration with the homework, which involved cognitive restructuring. Vu and Maxim reported that videoconferencing did not or slightly influenced them leaving treatment (i.e., 0 and 1, respectively, on an 11-point scale, 0 = *not at all*; 10 = *a lot*). Vu reported that there was nothing that he disliked about the technology, and he reported that it felt "less intimidating, that social exposure was minimal." Maxim had concurrent psychoanalysis, and reported that "face-to-face was much more effective." He also found face-to-face more personal.

Vu reported no difficulty with the technology, and Maxim reported that although he did not have difficulties with the picture or sound, he felt that the quality of the relationship with the therapist was 80% of what is would have been if face-to-face.

Vu reported that he would recommend videoconferencing for other individuals with the same problem. Maxim reported that he would not recommend videoconferencing for other individuals with the same problem, "unless it was due to distance," because he felt that face-to-face was always preferable. Maxim expressed a strong interest in coming back to treatment via videoconferencing, however at that time the study could not accommodate him.

Treatment Integrity

Treatment integrity refers to the degree to which experimental procedures are implemented as planned. Sessions 1, 3, 5, 7, 9, and 11 were rated for each participant on a checklist based on the treatment manual. Two sessions (Nella session 5, Sami session 1, and Alexander session 1) could not be rated due to problems with the tapes or the recording. A total of 93 5-minute segments of 31 treatment sessions were randomly selected (3 per session) and rated. Based on a 0 to 3 rating scale (0 = *absent*; 3 = *present*), the average rating for items that were present during the segment watched (i.e., items rated 1, 2, or 3) was 2.85, indicating high treatment integrity across sessions and participants (for individual participants' ratings, see Appendix O). Thus, high treatment integrity was supported.

Hypotheses

Anxiety in Speech Task, Duration of Speech Task, and Public Speaking Anxiety

Individual participants' scores on the dependent measures over time are shown in Table 3. Means and standard deviations for the group are shown in Table 4, and results of pre-planned orthogonal contrasts (*t*-tests) are described in Table 5. Effect sizes are also provided in Table 5 as a reference for archival purposes.

Table 3
Subjective Units of Discomfort Scale Results During the Speech Task, Duration (minutes) of Speech Task, and Public Speaking Anxiety Ratings

Variable	Participant	Initial interview	Pre-treatment	Post-treatment	3-month follow-up
Speech Task Anxiety (SUDS)	Zakaria	100.00	70.00	60.00	20.00
	Mike	100.00	100.00	60.00	70.00
	Nella	100.00	100.00	95.00	100.00
	Claudel	70.00	65.00	60.00	55.00
	Sami	100.00	95.00	50.00	45.00
Speech Task Duration (minutes)	Zakaria	3.58	7.67	10.00	10.00
	Mike	2.00	0.00	4.33	10.00
	Nella	0.00	0.00	0.42	0.00
	Claudel	2.00	1.58	10.00	10.00
	Sami	0.00	4.50	10.00	10.00
Public Speaking Anxiety	Zakaria	23.00	19.00	17.00	15.00
	Mike	28.00	27.00	8.00	8.00
	Nella	26.00	27.00	27.00	27.00
	Claudel	29.00	29.00	29.00	29.00
	Sami	26.00	28.00	6.00	5.00

Note. A score of zero indicates that the participant was too anxious to give a speech at the assessment point.

Table 4

Group Means and Standard Deviations for Subjective Units of Discomfort Scale Results During the Speech Task, Duration (minutes) of Speech Task, and Public Speaking Anxiety Ratings

Measure	Initial interview Mean (*SD*)	Pre-treatment (*SD*)	Initial interview and Pre-treatment[a] Mean (*SD*)	Post-treatment Mean (*SD*)	3-m. f-up Mean (*SD*)	Post and 3-m. f-up[b] Mean (*SD*)
Speech Task Anxiety (SUDS)	94.00 (13.41)	86.00 (17.10)	90.00 (14.03)	65.00 (17.32)	58.00 (29.71)	61.50 (22.26)
Speech Task Duration (minutes)	1.52 (1.53)	2.75 (3.31)	2.13 (2.13)	6.95 (4.40)	8.00 (4.47)	7.48 (4.24)
Public Speaking Anxiety	26.40 (2.30)	26.00 (4.00)	26.20 (3.05)	17.40 (10.55)	16.80 (10.87)	17.10 (10.70)

Note. [a] Initial interview and Pre-treatment = average of both initial interview and pre-treatment combined; [b] Post and 3-m. f-up = average of both post-treatment and 3-month follow-up combined.

Table 5
Orthogonal Contrasts for Subjective Units of Discomfort Scale Results During the Speech Task, Duration (minutes) of Speech Task, and Public Speaking Anxiety Ratings

Measure	Constrasts	t (df = 4)	p=	Effect size
Speech Task Anxiety (SUDS)	Initial interview – Pre-treatment	1.43	.23	0.64
	Post-treatment – 3-month follow-up	0.80	.47	0.36
	Initial interview and Pre-treatment - Post-treatment and 3-month follow-up	3.01	.04*	1.35
Speech Task Duration (minutes)	Initial interview – Pre-treatment	-0.95	.40	0.43
	Post-treatment – 3-month follow-up	-0.91	.42	0.41
	Initial interview and Pre-treatment - Post-treatment and 3-month follow-up	-3.69	.02*	1.65
Public Speaking Anxiety	Initial interview – Pre-treatment	0.39	.72	0.17
	Post-treatment – 3-month follow-up	1.50	.21	0.67
	Initial interview and Pre-treatment - Post-treatment and 3-month follow-up	1.91	.13	0.85

*$p < .05$

For each hypothesis, the data are first plotted graphically for descriptive purposes and then statistical analyses are presented.

Hypothesis 1. *It was expected that participants would report a change in the intensity of their anxiety (i.e., SUDS ratings) in a public speaking situation, as assessed during the impromptu speech task (ST; Beidel et al., 1989), which was completed at the initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. It was expected that there will be (a) no difference or an increase in anxiety between the initial interview and pre-treatment, (b) the same or a decrease in anxiety*

between post-treatment and follow-up, and (c) a decrease in anxiety between the combined initial interview and pre-treatment and combined post-treatment and follow-up assessments.

Figure 3 shows changes in anxiety during the speech task. Three participants (Zakaria, Claudel, Sami) obtained a score below the cut-off score for a non-clinical population (i.e., 55). Mike improved but remained in the clinical range, and Nella did not improve. When analysed as a group, there was no statistical difference between scores of initial interview and pre-treatment, t (4) = 1.43, p = .23, as expected; and no statistical difference between scores of post-treatment and follow-up, t (4) = 0.80, p = .47 (see Table 5). There was a statistically significant difference between combined initial interview and pre-treatment and combined post-treatment and 3-month follow-up, t (4) = 3.01, p = .04. The means indicate that from initial interview to follow-up, the intensity of speech anxiety reduced. The first hypothesis was therefore supported, although one participant did not improve.

Hypothesis 2. It was expected that participants would report a change in their speech duration (in minutes), as assessed by the impromptu speech task (ST; Beidel et al., 1989), which was completed at initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. It was expected that there will be (a) no difference or a decrease in duration between initial interview and pre-treatment, (b) the same or an increase in duration between post-treatment and follow-up, and (c) an increase in duration between the initial interview and pre-treatment and combined post-treatment and follow-up assessments.

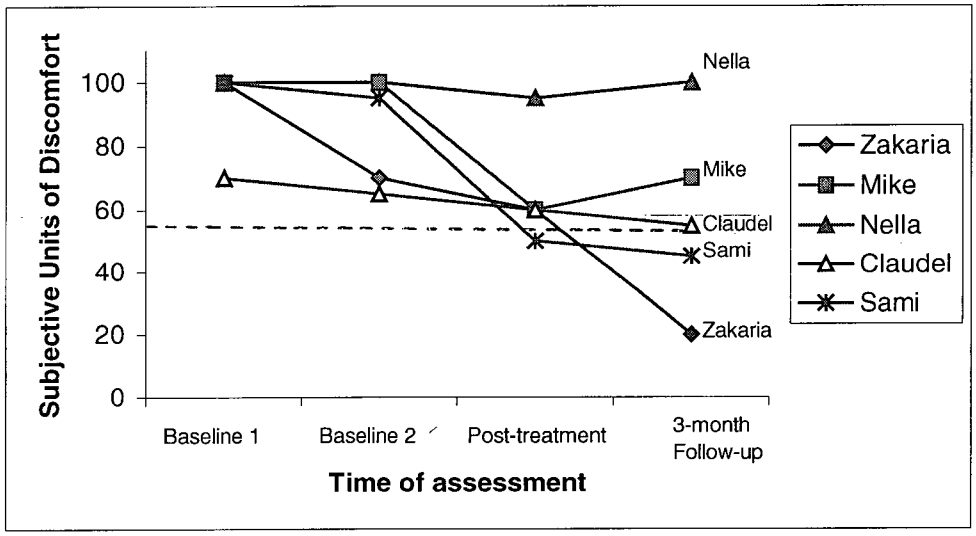

Figure 3. Individual participants' scores on the Subjective Units of Discomfort scale for the peak anxiety experience during the speech task measured at initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. The dotted line represents the cut-off scores for non-clinical population.

Figure 4 shows changes in duration of speech. Four participants (Zakaria, Mike, Claudel, and Sami) were able to speak for an amount of time that was out of the clinical range (10 minutes). Nella did not improve. When taken as a group, there was no statistical difference between scores of initial interview and pre-treatment, t (4) = -0.95, p = .40, as expected, and no statistical difference between scores of post-treatment and follow-up, t (4) = -0.91, p = .42 (see Table 5). There was a statistically significant difference between initial interview and pre-treatment and combined post-treatment and follow-up, t (4) = -3.69, p = .02. The means indicate that from initial interview to follow-up, the duration of speech increased. The second hypothesis was therefore supported,

although one participant did not change.

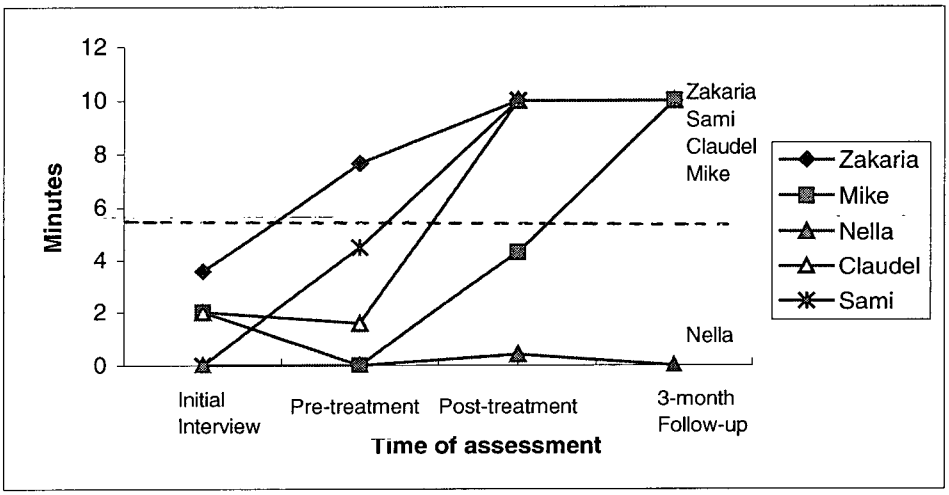

Figure 4. Individual participants' duration of speech task measured at initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. The dotted line represents the cut-off scores for non-clinical population.

Hypothesis 3. It was expected that participants would report a change in their public speaking anxiety, which was assessed at initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up with the Personal Report of Confidence as a Speaker measure (PRCS; Paul, 1966). It was expected that there will be (a) no difference or an increase of public speaking anxiety between the initial interview and pre-treatment, (b) the same or a decrease in public speaking anxiety between post-treatment and follow-up, and (c) a decrease in public speaking anxiety between the combined initial interview and pre-treatment and combined post-treatment and follow-up assessments.

Figure 5 shows changes in public speaking anxiety. Three participants (Zakaria, Mike, and Sami) reached the non-clinical range (i.e., PRCS score below 20), although Zakaria's ratings improved between the initial interview and pre-treatment. Claudel and Nella did not improve. There was no statistical difference between scores of initial

interview and pre-treatment, t (4) = 0.39, p = .72 as expected, and no statistical difference between scores of post-treatment and follow-up, t (4) = 1.50, p = .21 (see Table 5). There was no statistical difference between combined initial interview and pre-treatment and combined post-treatment and follow-up, t (4) = 1.91, p = .13. The means indicate that during treatment, the public speaking anxiety of participants taken as a group did not decrease. The third hypothesis was therefore not supported, although 3 participants reached the non-clinical range.

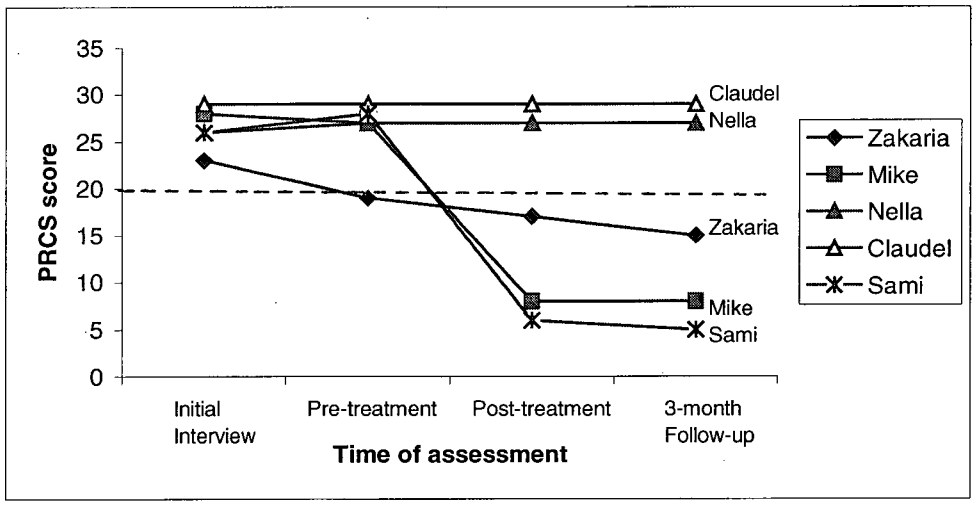

Figure 5. Individual participants' scores on the Personal Report of Confidence as a Speaker measure administered at the initial interview, once at pre-treatment, once at post-treatment, and once at 3-month follow-up. The dotted line represents the cut-off scores for non-clinical population.

In summary, the fact that there was little change between the initial interview and pre-treatment assessments suggest that participants were not reactive to the measure and that their condition was stable over time. The decrease of anxiety in the speech task and an increase in the speech task duration between combined initial interview and pre-treatment and combined post-treatment and follow-up suggests that participants improved on these measures. The fact that there was no change between post-treatment and 3-

month follow-up suggest that participants maintained their gains. The fact that public speaking anxiety was not different between combined initial interview and pre-treatment and combined post-treatment and 3-month follow-up suggests that participants as a group did not improve or get worse on that measure. Individual data however suggests that two participants clearly improved (Mike and Sami), one moderately improved (Zakaria), and two participants stayed the same (Nella and Claudel).

Questions

Variables that have been linked to treatment efficacy, both in terms of social anxiety and psychological treatment via videoconferencing, were explored in order to further inform the primary analysis, and better understand the results obtained. They were posed as questions rather than hypotheses due to the paucity of research and conflicting findings. The following questions relate to changes in self-monitoring of social anxiety, negative cognitions, self-statements, working alliance, satisfaction, and comfort.

Daily Social Anxiety in Difficult, Moderate, and Mild Situations

Question 1. To what extent will participants report a change in the intensity of the maximum level of expected and actual social anxiety during three daily social anxiety situations (i.e., the difficult, moderate, and mild situations), as assessed with SUDS ratings recorded in a social anxiety diary? Ratings were completed every day for 11 weeks over the course of baseline, treatment, post-treatment phase, and at 3-month follow-up. A rating was obtained for situations that actually occurred and an expected rating was obtained for situations that did not occur.

In order to determine whether CBT was associated with a statistically significant reduction in the intensity of maximum level of social anxiety during expected difficult,

moderate, and mild situations, interrupted time-series analyses were performed for each participant. The three situations were identified collaboratively by the participant and the therapist during a baseline assessment meeting. The following comparisons were performed: (a) baseline to treatment, (b) treatment to post-treatment, and (c) post-treatment to 3-month follow-up.

Only the expected SUDS ratings are analyzed because the number of actual SUDS ratings often did not reach 3 to 5 data points in each phase, which was insufficient for both visual and statistical analyses. In order to assess the extent of the relationship between expected ratings and actual ratings, the ratings for expected situations were correlated with the ratings for the actual situations for each participant and for each of the three situations they were self-monitoring. Pearson correlations ranged between .67 and 1.00 (see Appendix P), suggesting a strong relationship between the SUDS ratings of expected and actual situations.

The participants' scores for the first three questions (social anxiety during difficult, moderate, and mild situations) were plotted on separate graphs (see Figures 6 to 10) and analyzed visually. Social anxiety in each situation (i.e., difficult, moderate, mild) was analyzed separately. Within each situation, each participant was treated as a separate case, and analyzed individually (visually and statistically). Table 6 summarizes the results of visual and statistical analyses.

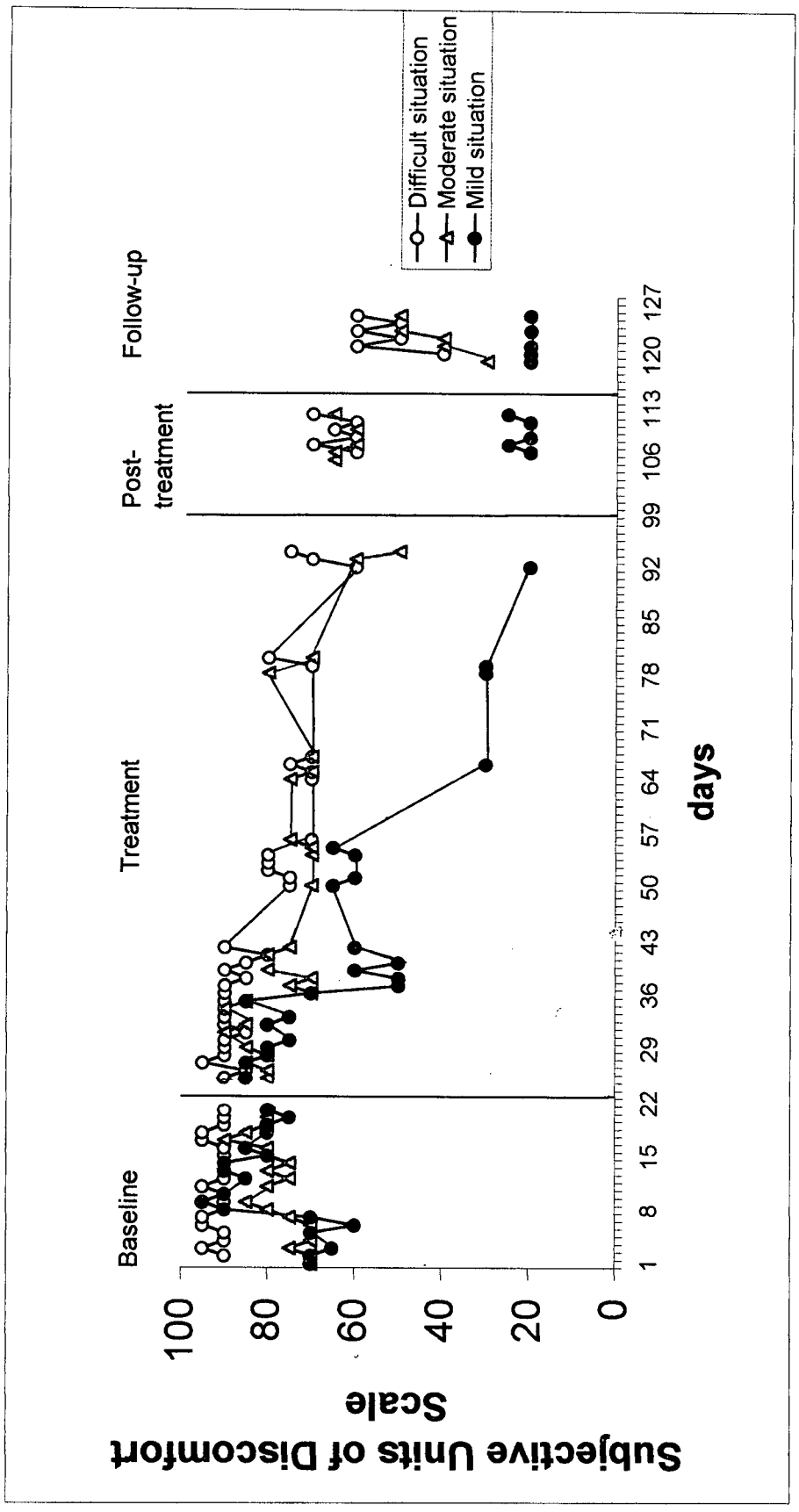

Figure 6. Zakaria's self-monitored ratings of expected anxiety in the difficult, moderate, and mild situations.

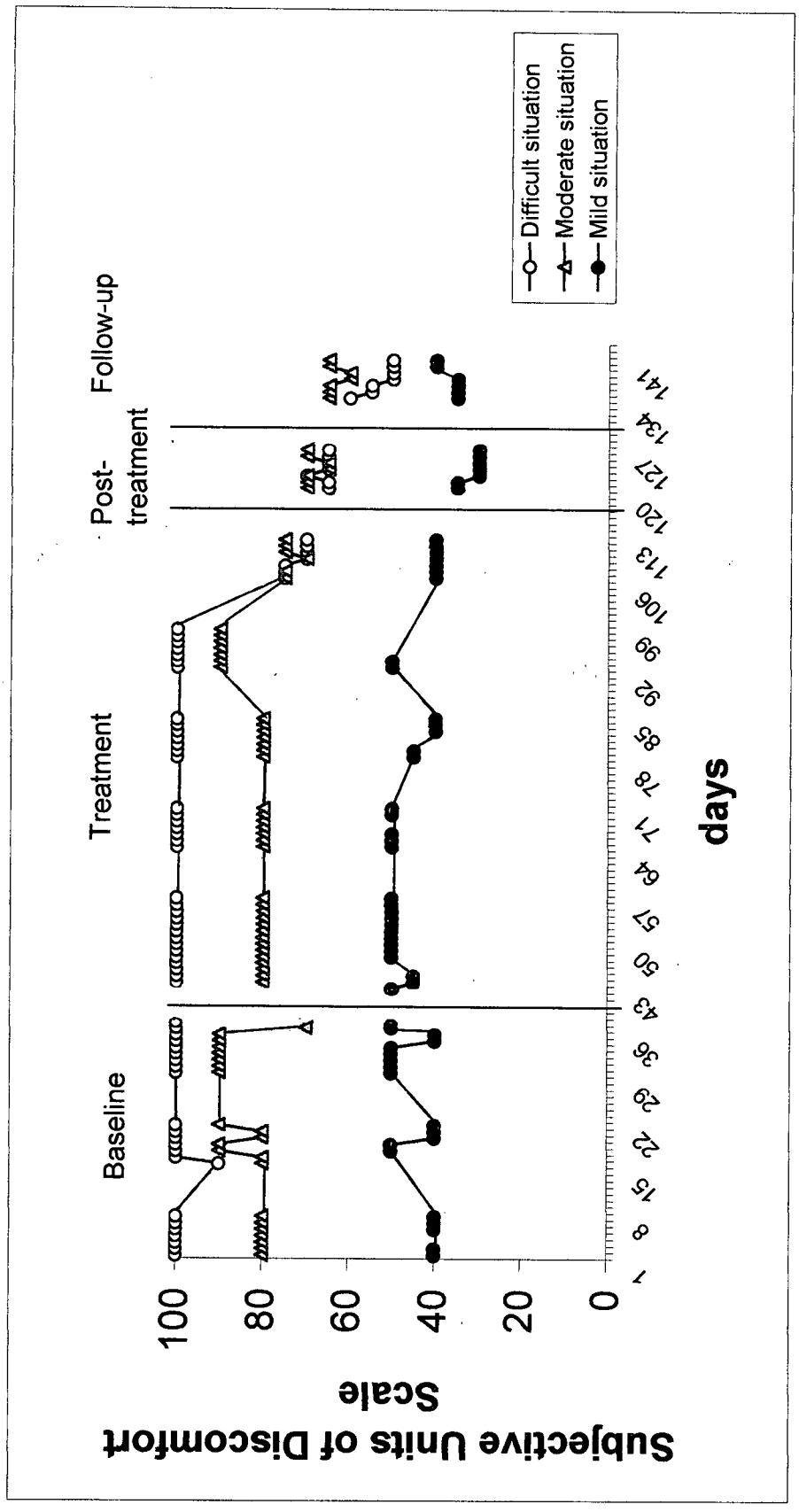

Figure 7. Mike's self-monitored ratings of expected anxiety in the difficult, moderate, and mild situations.

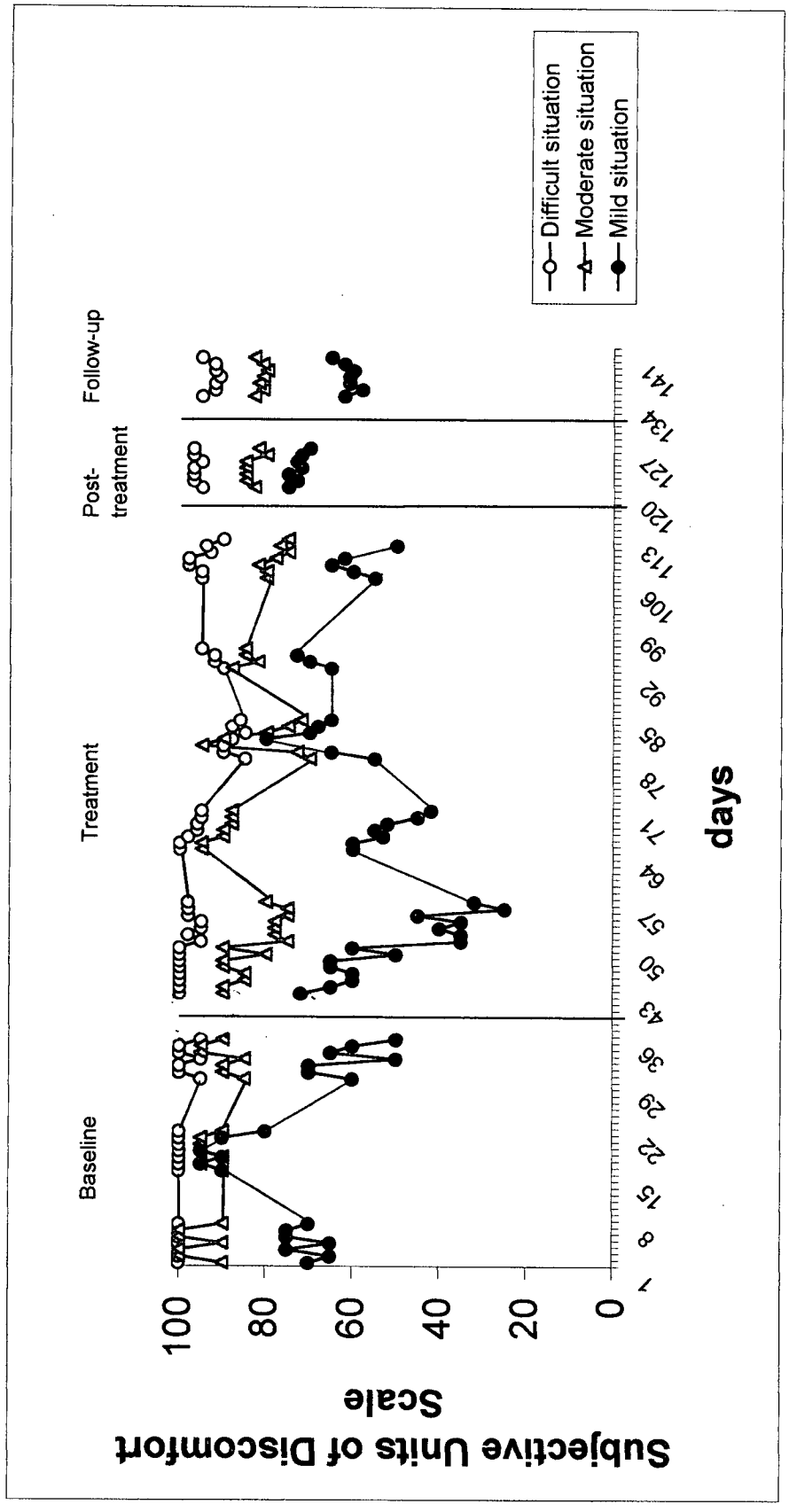

Figure 8. Nella's self-monitored ratings of expected anxiety in the difficult, moderate, and mild situations.

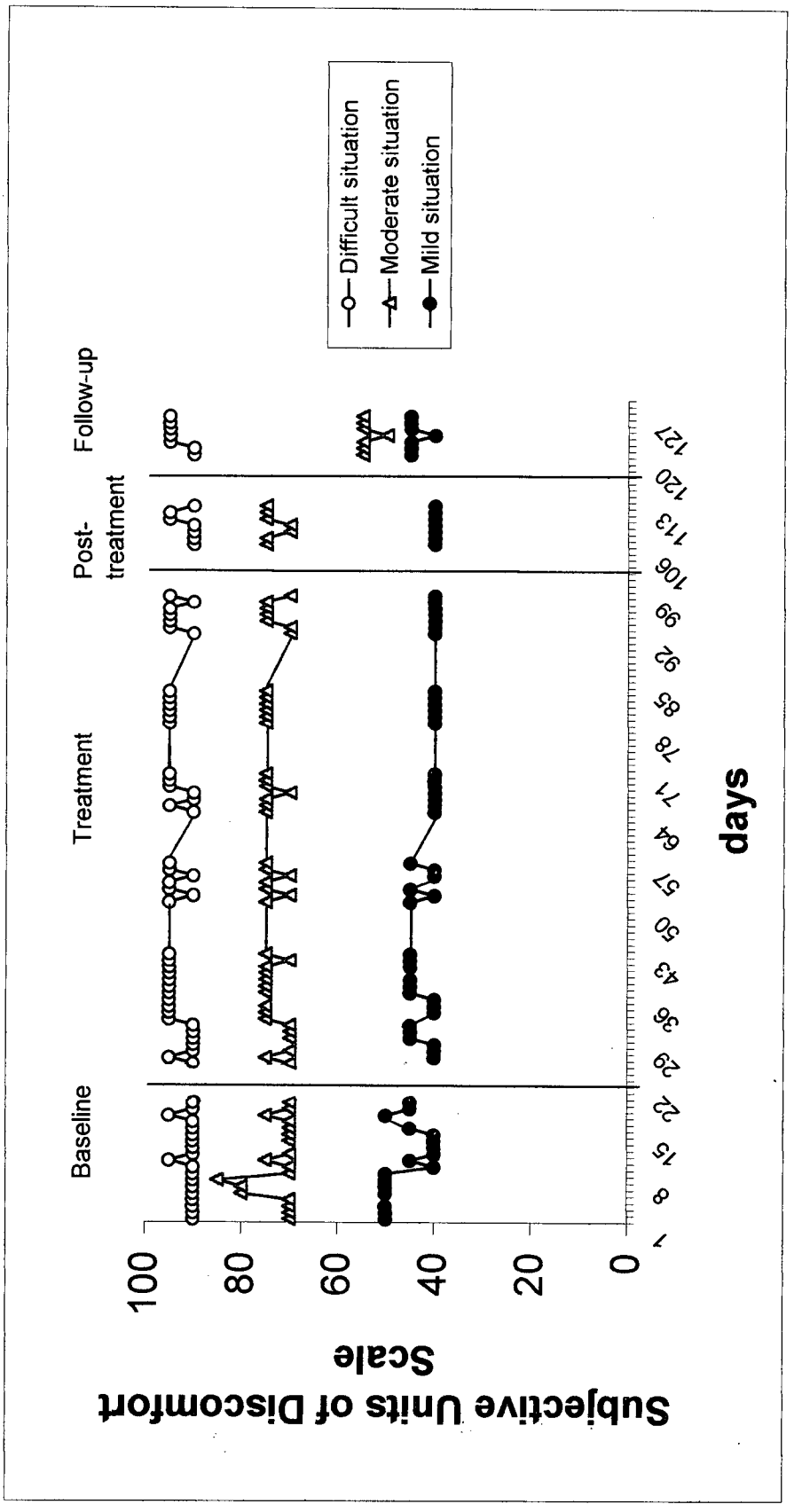

Figure 9. Claudel's self-monitored ratings of expected anxiety in the difficult, moderate, and mild situations.

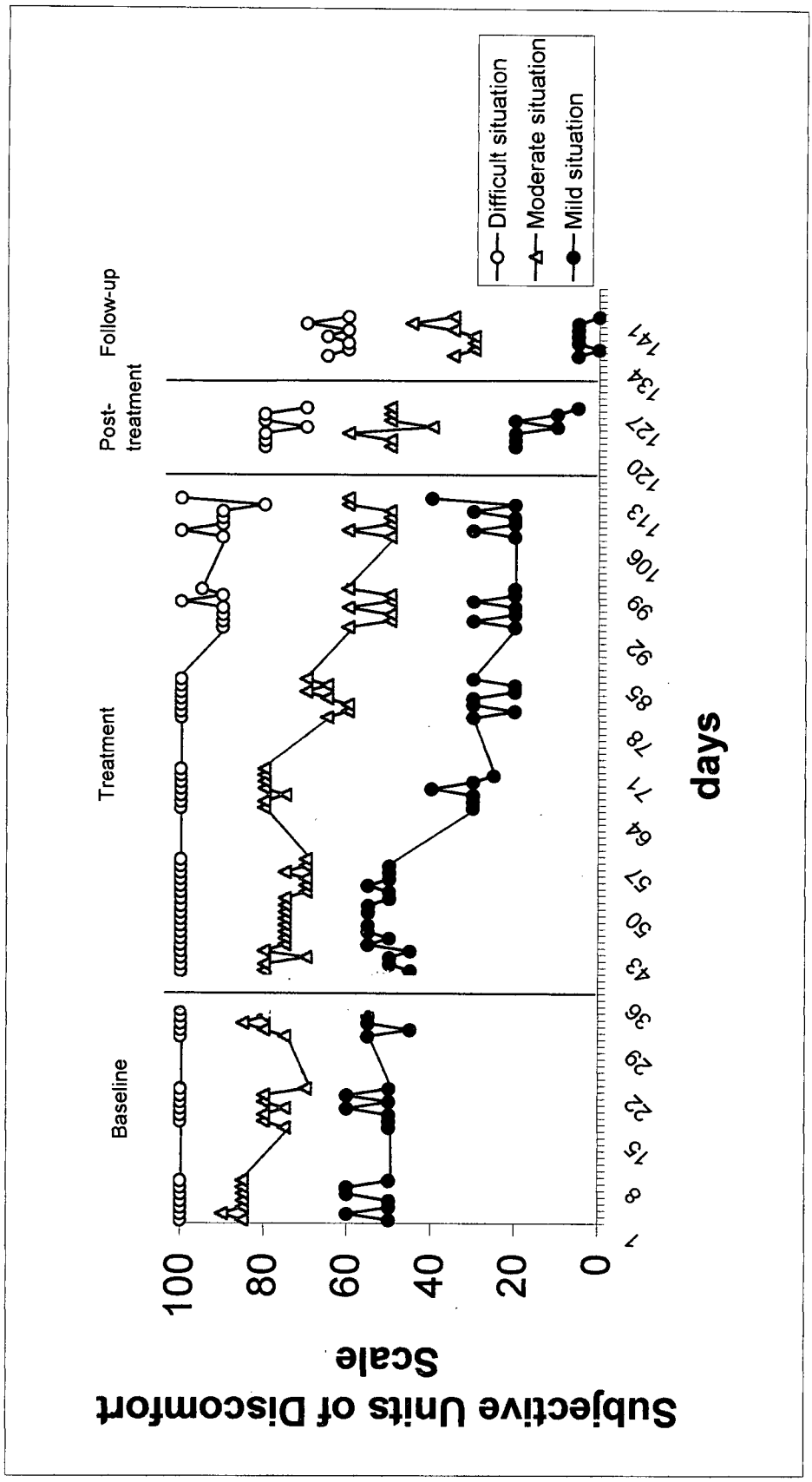

Figure 10. Sami's self-monitored ratings of expected anxiety in the difficult, moderate, and mild situations.

Table 6
Visual and interrupted time series results for anxiety in difficult, moderate, and mild situations from baseline to follow-up

Situation	Phases	Participant	Visual Analysis	*F*	*p*=		*df*
Difficult	Baseline to Treatment	Zakaria	+	1.69	.20		2,51
		Mike	=?	0.82	.45		2,65
		Nella	=	-			-
		Claudel	=	-			-
		Sami	=?	-			-
	Treatment to Post-treatment	Zakaria	+	1.48	.24		2,37
		Mike	+	0.22	.80		2,51
		Nella	=	2.18	.12		2,48
		Claudel	=	-			-
		Sami	+	9.96	<.001	***	2,51
	Post-treatment to Follow-up	Zakaria	=?	21.65	.001	***	2,7
		Mike	+	2.22	.17		2,9
		Nella	=	4.53	.04	*	2,9
		Claudel	=	0.14	.87		2,9
		Sami	+	1.23	.34		2,9
Moderate	Baseline to Treatment	Zakaria	+	1.23	.30		2,43
		Mike	=	2.36	.10		2,64
		Nella	=	-			-
		Claudel	=	-			-
		Sami	=	0.68	.51		2,65
	Treatment to Post-treatment	Zakaria	=	0.38	.68		2,29
		Mike	=	1.28	.29		2,50
		Nella	=	1.05	.36		2,48
		Claudel	=	-			-
		Sami	+	0.29	.75		2,51
	Post-treatment to Follow-up	Zakaria	+	9.42	.02	*	2,5
		Mike	+	1.30	.32		2,9
		Nella	=	1.61	.25		2,9
		Claudel	+	7.64	.01	*	2,9
		Sami	+	2.56	.13		2,9

Continued

Situation	Phases	Participant	Visual Analysis	*F*	*p*=		*df*
Mild	Baseline to Treatment	Zakaria	+	0.64	.53		2,37
		Mike	=	1.29	.28		2,49
		Nella	=	0.68	.51		2,57
		Claudel	=	0.46	.64		2,56
		Sami	+	1.09	.34		2,62
	Treatment to Post-treatment	Zakaria	+	0.31	.73		2,24
		Mike	=	1.32	.28		2,39
		Nella	=	1.79	.18		2,44
		Claudel	=	-	-		-
		Sami	+	0.20	.82		2,48
	Post-treatment to Follow-up	Zakaria	=	0.05	.95		2,5
		Mike	=?	0.50	.62		2,8
		Nella	+	4.54	.04	*	2,9
		Claudel	=?	2.55	.14		2,9
		Sami	+	1.41	.29		2,9

Note. A dash indicates that the coefficient could not be computed because of a lack of variability in one of the phases.
+ Generally improved between the phases; = Generally stayed the same over the phases; =? Generally the same, but possibility that there was an improvement between the phases.
* $p < .05$
** $p < .01$
*** $p < .001$.

Overall, based on the visual analysis (see Appendix Q for details of the visual analyses), there was an improvement in anxiety in the difficult situation between baseline and treatment for Zakaria, and between treatment and post-treatment and between post-treatment and follow-up for Zakaria, Mike, and Sami.

A statistical analysis of intervention effects for the difficult situation was conducted for each participant using the ITSACORR interrupted time-series analysis software program (Crosbie, 1993). ITSACORR uses an omnibus *F* test to determine the statistical significance of the overall change in intercept and slope between two phases having 5 or more data points. The program controls for autocorrelation. For the difficult situation, the omnibus *F* test showed statistically significant overall change from

treatment to post-treatment for Sami, $F(2, 51) = 9.96$, $p<.001$, and from post-treatment to follow-up for Zakaria and Nella [$F(2, 7) = 21.65$, $p = .001$, and $F(2, 9) = 4.53$, $p = .04$].

For the moderate situation, based on the visual analysis (see details in Appendix Q) there was an improvement between baseline and treatment for Zakaria, an improvement between treatment and post-treatment for Sami, and an improvement between post-treatment and follow-up for Zakaria, Mike, Claudel, and Sami.

For the moderate situation, the interrupted time-series analysis revealed that the omnibus F test was statistically significant for overall change from post-treatment to follow-up for Zakaria and Claudel [$F(2, 5) = 9.42$, $p = .02$, and $F(2, 9) = 7.64$, $p = .01$].

Finally, for the mild situation, the visual analysis suggests an improvement between baseline and treatment and between treatment and post-treatment for Zakaria and Sami, and an improvement between post-treatment and follow-up for Nella and Sami.

For the mild situation, the interrupted time-series analysis revealed that the omnibus F test was statistically significant for overall change from post-treatment to follow-up for Nella [$F(2, 9) = 4.54$, $p = .04$].

Overall, Zakaria, Mike, and Sami showed significant improvement in expected maximum level of anxiety for the difficult, moderate, and mild situations. For these participants, the visual analysis of the results show a delayed association between treatment and change in anxiety in different situations, with the mild situation decreasing first, the moderate situation decreasing second, and the difficult situation decreasing last. Nella showed an improvement between post-treatment and follow-up for the mild

situation. Claudel showed an improvement between post-treatment and follow-up for the moderate situation. No participant became worse.

Public Self-Consciousness, Fear of Negative Evaluation, and Attributions

Question 2. (a) To what extent will participants report a decrease in public self-consciousness (i.e., PSCS), fear of negative evaluation (i.e., FNE-M), and internal attributions (i.e., ASQ), which were assessed at the initial interview, six times over the course of treatment (at sessions 1, 3, 5, 7, 9, 11), at post-treatment, as well as at 3-month follow-up?

Individual scores for cognitions are displayed in Table 7, and scores are graphed in Appendix R. Based on these descriptive data, four participants were stable on the PSCS scale, and 1 (Sami) decreased, from 21 to 13. When taken as a group, results of one-way repeated measures ANOVAs did not reveal a statistically significant decrease on the PSCS over time, F (8, 32) = 1.09, p = .40; ES = 1.04 (see Table 8).

Based on descriptive data (see Table 7 and Appendix R), four participants were stable on the FNE-M scale, and 1 (Sami) decreased, from 33 to 18. When taken as a group, results of one-way repeated measures ANOVAs revealed that there was no statistically significant decrease on the FNE-M over time, F (8, 32) = 1.27, p=.30, ES = 1.13 (see Table 8).

Table 7
Individual Scores for Cognitions, Working Alliance, Satisfaction, and Comfort

Variable	Participant	BL1	BL2	S1	S3	S5	S7	S9	S11	Post-tr.	3-mth.
Self-Consciousness	Zakaria	21.00		21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
	Mike	16.00		14.00	16.00	15.00	18.00	20.00	13.00	14.00	14.00
	Nella	19.00		19.00	18.00	18.00	17.50	18.00	17.00	19.00	20.00
	Claudel	16.00		14.00	16.00	17.00	18.00	18.00	17.00	16.00	16.00
	Sami	21.00		21.00	19.00	16.00	16.00	15.00	12.00	10.00	13.00
Fear of Negative	Zakaria	40.00		34.00	35.00	35.00	36.00	34.00	35.00	35.00	38.00
Evaluation	Mike	27.00		28.00	28.00	27.00	30.00	34.00	22.00	22.00	25.00
	Nella	31.00		30.00	26.00	26.00	28.00	29.00	36.00	30.00	31.00
	Claudel	34.00		36.00	36.00	38.00	36.00	38.00	38.00	35.00	35.00
	Sami	33.00		32.00	32.00	31.00	26.00	26.00	22.00	17.00	18.00
Attributions	Zakaria	17.00		16.00	14.00	14.00	13.00	13.00	12.00	12.00	12.00
	Mike	17.00		15.00	5.00	7.00	7.00	8.00	5.00	8.00	7.00
	Nella	9.00		16.00	11.00	9.00	12.00	13.00	10.00	14.00	10.00
	Claudel	17.00		17.00	16.00	17.00	18.00	16.00	15.50	16.00	17.00
	Sami	16.00		17.00	12.00	8.00	11.00	10.00	9.00	8.00	7.00
Negative Thoughts	Zakaria	65.00	62.00							47.00	29.00
	Mike	54.00	45.00							20.00	22.00
	Nella	60.00	61.00							58.00	60.00
	Claudel	63.00	64.00							36.00	49.00
	Sami	58.00	66.00							33.00	34.00
Positive Thoughts	Zakaria	32.00	38.00							48.00	54.00
	Mike	27.00	21.00							33.00	28.00
	Nella	26.00	32.00							34.00	26.00
	Claudel	25.00	22.00							32.00	24.00
	Sami	29.00	35.00							65.00	60.00

Continued

Variable	Participant	BL1	BL2	S1	S3	S5	S7	S9	S11	Post-tr.	3-mth.
Working Alliance	Zakaria			213.00	191.00	212.00	197.00	194.00	209.00		
	Mike			226.00	240.00	239.00	237.00	242.00	252.00		
	Nella			200.00	201.00	189.00	206.00	200.00	201.00		
	Claudel			202.00	212.00	228.00	221.00	232.00	227.00		
	Sami			216.00	229.00	234.00	244.00	251.00	246.00		
Satisfaction	Zakaria			5.00	3.86	4.71	4.14	4.29	4.71		
	Mike			6.14	6.57	6.57	6.57	6.58	7.00		
	Nella			6.14	5.57	5.29	5.71	5.42	5.29		
	Claudel			5.57	5.86	6.86	6.14	5.57	5.86		
	Sami			4.29	5.86	6.00	6.86	6.71	6.86		
Comfort	Zakaria	3.25		5.50	4.67	5.50	5.08	5.41	5.58		
	Mike	4.92		5.75	6.58	6.75	6.84	6.75	6.83		
	Nella	5.08		5.42	5.00	3.50	5.08	5.16	4.92		
	Claudel	6.34		6.75	6.67	6.67	6.34	6.75	6.75		
	Sami	4.08		4.92	5.75	5.00	6.00	6.58	6.66		

Note. Blanks in the table mean that data were not collected at that point in time. BL1 = Initial interview; BL2 = Pre-treatment assessment; S1 = Treatment session 1; S3 = Treatment session 3; S5 = Treatment session 5; S7 = Treatment session 7; S9 = Treatment session 9; S11 = Treatment session 11; Post-tr. = 1-week post-treatment; 3-mth. = 3-month follow-up. For all variables, the higher the value, the greater the construct.

Table 8

Repeated measures[a] ANOVAs for cognitions, working alliance, satisfaction, and comfort

Variable	*F*	*df*	*p*=	Effect size[b] (*d*)
Public self-consciousness	1.09	8, 32	.40	1.04
Fear of negative evaluation	1.27	8, 32	.30	1.13
Attributions	4.24	8, 32	<.01	2.06
Positive thoughts	4.18	3, 12	.03	2.04
Negative thoughts	10.48	3, 12	<.01	2.64
Working Alliance	2.05	5, 20	.12	1.43
Satisfaction	0.65	5, 20	.66	0.81
Comfort	3.30	6, 24	.02	1.82

Note. [a]Measures were taken at the initial interview, 6 times over the course of treatment, once at post-treatment, and once at 3-month follow-up.

[b]Effect size formula used: $d = 2\sqrt{\frac{df_n F}{df_d}}$

All participants except Claudel decreased on the ASQ scale based on descriptive data (see Table 7 and Appendix R). When taken as a group, results of one-way repeated measures ANOVAs revealed that participants showed a statistically significant decrease on the ASQ over time, F (8, 32) = 4.24, p<.01, ES = 2.06 (see Table 8).

(b) To what extent will participants' public self-consciousness (i.e., PSCS), fear of negative evaluation (i.e., FNE-M), and internal attributions (i.e., ASQ), be significantly related (linear relationship) to daily expected social anxiety (SUDS) in the mild social anxiety situation in the initial interview and over the course of treatment?

Expected SUDS daily ratings for the mild situation were averaged in order to provide a score for each participant for each week during which cognitions were assessed over baseline, treatment, post-treatment, and 3-month follow-up (see Table 9). Expected ratings were used as opposed to ratings of situations that occurred because of the insufficient number of data points for ratings of actual situations. Ratings for the mild

situation were used for correlations as opposed to ratings from the difficult or moderate situations because of the greater variability of the data; which, from a statistical perspective, is preferable when using correlations.

Table 9
Individual Weekly Averaged Expected SUDS of daily ratings for the mild situation

Participant	BL1	S1	S3	S5	S7	S9	S11	Post-tr.	3-mth
Zakaria	67.50	84.00	56.67	62.50	30.00	30.00	20.00	22.00	20.00
Mike	40.00	45.00	48.00	50.00	50.00	42.00	50.00	40.00	36.67
Nella	70.71	74.71	35.29	52.43	67.17	69.33	58.40	72.86	61.29
Claudel	50.00	42.50	45.00	42.50	40.00	40.00	40.00	40.00	44.29
Sami	54.29	49.29	50.83	30.83	25.71	22.86	25.71	15.00	3.57

Note. BL1 = Initial interview; S1 = Treatment session 1; S3 = Treatment session 3; S5 = Treatment session 5; S7 = Treatment session 7; S9 = Treatment session 9; S11 = Treatment session 11; Post-tr. = 1-week post-treatment; 3-mth. = 3-month follow-up. The higher the value, the greater the anxiety.

Correlation coefficients for each participant are presented in Table 10 and the corresponding scatter plots are shown in Appendix M. The scatter plots revealed that many of the relationships were non linear. Because of the small number of data point used to calculate the correlations, the magnitude of the correlation was considered strong if greater than .50 (cf., criteria by Cohen, 1992), as opposed to statistically significant coefficients.

For the public self-consciousness, one participant (Sami) showed a strong positive correlation (r = .90), indicating that lower levels of social anxiety were associated with lower ratings of public self-consciousness. The three other correlations were not strong (see Table 10). Correlations could not be calculated for Zakaria because there was no variation in his PSCS rating.

For the fear of negative evaluation, three participants (Nella, Claudel, and Sami) showed strong correlations (see Table 10). For Nella and Sami (r = .73; and r = .92), this indicates that lower levels of social anxiety were associated with lower ratings of fear of negative evaluation. One showed a strong negative correlation (Claudel, r = -.65). Examination of the scatter plots indicated that Claudel's anxiety decreased from baseline to post-treatment but increased slightly at follow-up, whereas her fear of negative evaluation increased during treatment, and returned to initial interview level at follow-up.

Table 10
Pearson correlations between SUDS ratings for the mild situation and public self-consciousness, fear of negative evaluation, attributions, working alliance, satisfaction, and comfort

Variable	Zakaria *r*	Mike *r*	Nella *r*	Claudel *r*	Sami *r*
Public self-consciousness	-	.04	.33	-.49	**.90**
Fear of negative evaluation	.18	.09	**.73**	**-.65**	**.92**
Attributions	**.92**	-.39	**.50**	.25	**.88**
Working Alliance	.41	.32	.25	**-.59**	**-.91**
Satisfaction	.38	.48	.46	.12	**-.82**
Comfort	-.46	.25	.40	-.31	**-.76**

Note. A dash indicates that correlation could not be calculated due to no variation in one of the variables. Correlations in bold are considered to represent strong relationships. df = 7 for public self-consciousness, fear of negative evaluation, and attributions; df = 4 for working alliance and satisfaction; df = 5 for comfort.

For internal attributions, three participants showed positive correlations (see Table 10; (Zakaria, r = .92; Nella, r = .50; Sami, r = .88) suggesting that lower levels of social anxiety were associated with lower ratings of internal attributions.

In summary, none of the participants became worse (relative to baseline) over the course of treatment on the cognitive variables (public self-consciousness scale, fear of negative evaluation scale, and internal attributions). Attributions showed a statistically significant decrease over time (all except Claudel decreased). Of the seven correlations

between cognitions and expected anxiety in the mild anxiety situation that were strong (*r* above .50), six were positive, indicating that as fear-related cognitions decreased, expected anxiety in the mild anxiety situation decreased. The one correlation that was strong but negative reflects Claudel's pattern of anxiety decrease paired with increase in cognitions.

When examining participants' data individually, Zakaria reported a decrease in anxiety and decreased in internal attributions, therefore this correlation was positive and strong (i.e., as anxiety decreased, internal attributions decreased). In contrast, he did not decrease on public self-consciousness and fear of negative evaluation. Mike showed minimal improvement in his cognitions and some improvement in his anxiety. Nella showed very little change in her anxiety ratings and in her negative cognitions, which explains why her correlations are positive and greater than .50 (i.e., as anxiety stayed the same, cognitions stayed the same). Claudel showed a small improvement in her anxiety at 3-month follow-up but no change in her cognitions, which may explain the negative correlation between fear of negative evaluation and self-monitoring (i.e., as anxiety decreased, cognitions stayed the same). Sami showed a significant decrease in both his anxiety and his negative cognitions, which explains his positive strong correlations (i.e., as anxiety decreased, negative cognitions decreased). Overall, there was variability across participants' correlations between negative cognitions and their level of anxiety.

Positive and Negative Thoughts

Question 3. To what extent will participants report a decrease in negative thoughts (SISST-N), and an increase in positive thoughts (SISST-P), which was assessed

at the initial interview, at the pre-treatment assessment, once at post-treatment as well at follow-up?

Based on descriptive data (see Table 7 and Appendix R), negative thoughts decreased for 4 out of 5 participants (all except Nella), and gains were maintained at follow-up. Positive thoughts increased for all participants at post-treatment, but returned to pre-treatment levels for Mike, Nella, and Claudel. Zakaria and Sami maintained their increase in positive thoughts at follow-up. When taken as a group, one-way repeated measures ANOVAs showed a statistically significant time effect for negative thoughts, F (3, 12) = 10.48, p<.01, ES = 2.64 and positive thoughts, F (3, 12) = 4.18, p=.03, ES = 2.04 (see Table 8). The means indicate that there was support for a decrease in negative cognitions, and a slight increase in positive cognitions over time, and none of the participants became worse over the course of treatment, based on these descriptive data.

Working Alliance

Question 4. (a) To what extent will participants report an increase in working alliance (WAI), which was assessed at sessions 1, 3, 5, 7, 9, 11?

Based on descriptive data (see Table 7 and Appendix R), all participants maintained a stable or improved working alliance over treatment. Mike, Claudel, and Sami's ratings increased over time, reaching scores of 252, 227, and 246, respectively, at the 11th treatment session. Zakaria and Nella's ratings remained stable over treatment, with their last score being 209 and 201, respectively, at the 11th session. The average score across participants was 219.70 (SD = 19.21; range 189-252). When taken as a group, based on a one-way repeated measures ANOVA, participants did not show a

statistically significant change on the WAI over time, F (5, 20) = 2.05, p=.12, ES = 1.43 (see Table 8).

(b) To what extent will participants' levels of working alliance (WAI) and daily expected social anxiety (SUDS) in the mild situation be significantly related?

Pearson correlations (see Table 10) showed a strong negative relationship for only two participants (Claudel, r = -.59; Sami r = -.91), suggesting that lower levels of social anxiety were associated with higher ratings of working alliance.

Satisfaction and Comfort

Question 5. (a) To what extent will participants report an increase in satisfaction with treatment (CSS), assessed at sessions 1, 3, 5, 7, 9, 11?

Based on descriptive data (see Table 7 and Appendix R), satisfaction was stable (Zakaria, Mike, Claudel), improved (Sami), or decreased (Nella) for participants over the course of treatment on the CSS. The average across participants was 5.73 (SD = .89; range 3.86-7.00). One-way repeated measures ANOVAs revealed no statistically significant change on the CSS over time, F (5, 20) = 0.65, p=.66, ES = 0.81 (see Table 8).

(b) To what extent will participants' levels of satisfaction (CSS) over the course of treatment and daily expected social anxiety (SUDS) in the mild situation be significantly related (i.e., linear relationship)?

Pearson correlations (see Table 10) revealed only one strong negative correlation (r = -.82), indicating that for Sami, as anxiety decreased, satisfaction increased.

Question 6. (a) To what extent will participants report an increase in comfort with videoconferencing (DCCS-V), assessed once at the initial interview and at sessions 1, 3, 5, 7, 9, 11?

Based on descriptive data (see Table 7 and Appendix R), comfort was stable (Zakaria, Nella, Claudel) or improved (Mike, Sami) for all participants on the DCCS-V. The average across participants was 5.68 (*SD* = 0.98; range 3.25-6.84). One-way repeated measures ANOVAs revealed a statistically significant increase on the DCCS-V over time, F (6, 24) = 3.30, p=.02, *ES* = 1.82 (see Table 8). An examination of the means indicates an increase from 4.73 at pre-treatment to 6.15 at session11.

(b) To what extent will participants' comfort with videoconferencing over the course of treatment and daily expected social anxiety (SUDS) in the mild situation be significantly related (i.e., linear relationship)?

Pearson correlations (see Table 10) showed only one strong negative correlation (r = -.76), indicating that for Sami as anxiety decreased, comfort increased.

In summary, there was no consistent trend indicating a relationship between working alliance, satisfaction, or comfort and expected anxiety in the mild situation (only Sami showed a strong negative relationship, indicating that as anxiety decreased, working alliance, satisfaction, and comfort increased). Generally, working alliance and satisfaction were stable over the course of treatment, whereas comfort with videoconferencing improved.

Clinical Significance

Endstate functioning. High endstate functioning in the present study was defined as the presence of (a) a Personal Report of Confidence as a Speaker (Paul, 1966) score of less than or equal to 20; (b) a Clinical Global Impressions (Guy, 1976) rating less than or equal to 2; (c) speech duration greater than or equal to 5.7 minutes; and (d) a SUDS ratings during the speech less than or equal to 55. Individuals who achieved that score or

better received 1 point. The total score ranges from 0 to 4, with higher scores reflecting higher functioning. Total scores ranging from 0 to 1 are classified as low endstate status, those receiving 2 or 3 are classified as moderate endstate status, and those receiving 4 are classified as high endstate status. In the present study, this index was used to determine each participant's level of functioning at the conclusion of treatment and at 3-month follow-up.

At pre-treatment (see Table 3), none of the participants met any of the endstate functioning criteria except for Zakaria, who met two criteria (i.e., pre-treatment PRCS score of 19, and speech task duration of 7.67 minutes). At post-treatment (see Table 11), one participant (Sami) reached a high endstate status (4), two participants (Zakaria and Mike) reached a moderate endstate status (2 or 3), and two participants (Nella and Claudel) had a low endstate status (0 or 1).

At 3-month follow-up (see Table 11), two participants (Zakaria and Sami) reached a high endstate status (4), two participants (Mike and Claudel) reached a moderate endstate status (2 or 3), and one participant (Nella) had a low endstate status (0). Thus, 80% of participants (4 of 5) benefited clinically from the CBT via videoconferencing.

Table 11
Participants' Endstate Functioning at 1-Week Post-Treatment and at 3-Month Follow-Up

	Zakaria		Mike		Nella		Claudel		Sami	
Criteria	Post-treat.	3-mth.	Post-treat.	3-mth.	Post-treat.	3-mth.	Post-treat.	3-mth.	Post-treat.	3-mth.
PRCS score 20 or lower	17*	15*	8*	8*	27	27	29	29	6*	5*
CGI severity 2 or lower	3	1.5*	2*	1.5*	5	4	3.5	4	2*	1*
SPD (minutes) 5.7 or longer	10.0*	10.0*	4.3	10*	0.4	0.0	10*	10*	10*	10*
SPA (SUDS) 55 or lower	60	20*	60	70	95	100	60	55*	50*	45*
Total score	2	4	2	3	0	0	1	2	4	4
Endstate status	Mod.	High	Mod.	Mod.	Low	Low	Low	Mod.	High	High

Note. PRCS = Personal Report of Confidence as a Speaker; CGI = Clinical Global Impressions scale; SPT = Speech task duration; SPA = Speech task anxiety; Mod. = Moderate; Post-treat. = 1-week post-treatment; 3-mth. = 3-month follow-up; * = criteria for endstate functioning met

DSM-IV criteria for social phobia. The social phobia items of the Structured Clinical Interview for DSM-IV (First et al., 1995) were administered at post-treatment and 3-month follow-up by an evaluator who was not associated with the project in any way. This was used to determine each participant's clinical or non-clinical diagnostic status at the conclusion of treatment and at 3-month follow-up. At post-treatment,

Zakaria, Mike, and Sami no longer met the diagnostic criteria for social anxiety disorder. These gains were maintained at 3-month follow-up, as all three participants did not meet diagnostic criteria.

Medication and Other Psychoactive Substance Intake

One participant (Nella) was using medication and alcohol when we started treatment in order to cope with anxiety in social situations. She was able to comply with the research demands in that she did not change the type of medication during the course of the study or her alcohol consumption. She agreed not to use medication or alcohol when coming to sessions, and tried either not to use any psychoactive substance in exposures, to decrease the dosage or quantity, and to delay intake of the substance. Medication and alcohol intake remained stable over the course of treatment and at 3-month follow-up.

One participant, Mike, smelled of marijuana and his eyes were more red than usual at treatment session seven. This was observed by the research assistant located at the client site. The possibility that he may feel anxious coming to sessions and may be tempted to use psychoactive substances had been discussed early in treatment, as well as the impact of doing so (i.e., subtle avoidance). The potential impact of using psychoactive substances when doing exposures was reviewed with Mike at sessions six and seven. He indicated that he had a clear understanding of the negative impact of this type of avoidance, but did not reveal resorting to the use of drugs. It is not possible to know for certain if the client had in fact smoked marijuana prior to the treatment sessions, and whether this explains his ratings for expected anxiety. However, it is a variable that

cannot be ignored in interpreting the results. No specific relationship with the dependent variables was observed at session seven.

Treatment Credibility and Expectancies for Improvement

Treatment credibility has been found to be related to treatment outcome. Treatment credibility and expectancies for improvement scores at session four were very high for four of the participants on a 10-point scale (Mike, 9.67; Nella, 7.67; Claudel, 9.00; and Sami, 9.67). Zakaria's score of 5.67 suggests that he had limited expectations about how much he could improve with this treatment. This may be explained by the fact that the participant described the North American culture as very different from his culture of origin, especially with regards to how people interact socially. Zakaria did not raise any other issues that may help understand his rating.

Treatment Adherence

Participants were compliant with weekly exposures and cognitive restructuring homework. One participant (Nella) had a slower start congruent with her severe pre-treatment anxiety. In-session exposures were broken down into a format that Nella could tolerate, but they were difficult to reproduce outside of sessions (e.g., exposure to reading one paragraph in front of 2 people). Nella reported at the ninth session that she was doing more homework exposures, and that she saw how this process could help her.

Participants' Treatment Evaluation

Participants' comments about their experience with treatment via videoconferencing were gathered to help understand their responsiveness to treatment and to guide future research. The Post-treatment telephone interview (Appendix I) was performed after the 3-month follow-up assessment with all 5 participants (Claudel sent

her answers in a written format due to difficulties to set up a telephone appointment; the four others answered the questions on the telephone). A description of participants' answers is provided in Appendix S.

All 5 completers reported that they were satisfied ($M = 8$; range from 6 to 10) on an 11-point scale (0 = *not satisfied*; 10 = *very satisfied*). All participants reported that either cognitive restructuring and/or in-session exposures were very helpful. They reported that they met their goals in treatment or that they improved significantly, with the exception of Nella. Nella expressed that when she realized the amount of involvement treatment implied, she realized she might not meet her goals completely. When asked whether anything about the therapy situation hindered achieving their goals, 4 participants did not report anything. Nella said that, although a "small factor," she may have opened up more in face-to-face treatment and that exposures could have been more gradual. Zakaria, Mike, and Claudel indicated that treatment could be improved by increasing the number of sessions. Sami did not have specific suggestions.

Zakaria found that videoconferencing was no different from face-to-face therapy; Nella and Claudel reported that although they felt a greater distance in the relationship with the therapist, there was probably no difference in terms of treatment effectiveness. Mike and Sami did not have previous experience with therapy, and both reported that they found it easy to adapt to treatment and forgot about the videoconferencing context.

Three participants reported no difficulties with the technology, and 2 participants (Zakaria and Sami) reported the presence of a lag and one instance of disconnection, which they evaluated as a minor occurrence. Aspects that participants liked about the technology include that videoconferencing was relaxing, comfortable, gradual in terms of

exposures (Mike), interesting (i.e., having the option of seeing self while talking), and very real. Three participants did not report anything that they did not like about videoconferencing. Nella and Claudel, however, reported that they felt it did not feel as "real." For Claudel, this was reported as not necessarily significant. For Nella, this seemed to have implications in terms of her involvement in treatment. Finally, all 5 participants reported that they would recommend videoconferencing for other individuals with the same problem. Nella specified that face-to-face was better, but that she would recommend videoconferencing if people did not have access to face-to-face.

Therapist's Observations

As the therapist, I found that the objectives of CBT were met with participants, and that cognitive restructuring and in-session exposures were performed similarly to face-to-face. In some instances, utilization of the technology for exposures, as opposed to making efforts to make it the same as face-to-face, was helpful (e.g., Sami used the mute function to re-create a situation where he was not listening in class; it was easy to show participants their presentations on tapes; Claudel used the picture-in-picture function, allowing her to see herself while giving a speech). The collaboration with my research assistant located at the client's location was crucial (i.e., she brought written material for participants, reported to me smells of marijuana, she was present in the client's room for some in-session exposures). In addition, the availability of telephone technical support with people who were familiar with the two different sets of equipment at each location (James Coyle, Linda McIntyre, and Craig Ross) was instrumental in promptly resolving technology-related problems.

My satisfaction with videoconferencing for treatment was at a 9 on a 0 – 10 scale (0 = *not satisfied*; 10 = *very satisfied*). I found that I needed to ask more questions about how clients were feeling and what they were thinking in order to be confident that I had a good understanding of what they thought and how they felt about the cognitive restructuring and the exposures. Overall, communication of participants' feelings was easy, videoconferencing was not a problem for treatment, and I almost always forgot about the videoconferencing context.

The few instances of technology-related interruptions over the 72 hours of therapy provided were not problematic, because they were promptly fixed and we had established a plan in case of failure to reconnect (i.e., availability of telephone in client's and therapist's room). I found that seeing 4 participants in one day via videoconferencing was comfortable, and that if I saw 5 my eyes would become tired.

CHAPTER V – DISCUSSION

The results of this study revealed that there is some support for the efficacy of CBT via videoconferencing for social anxiety disorder. Although each of the 5 participants responded uniquely to the treatment via videoconferencing, the response patterns of 3 (Zakaria, Mike, and Sami) of the treatment completers supported the efficacy of CBT via videoconferencing in treating social anxiety (i.e., reduced anxiety during a speech task, increased duration of a speech task, and reduced public speaking anxiety). In addition, another participant (Claudel) showed a similar pattern of reduced anxiety during the speech task and increased duration of the speech task. Moreover, treatment gains were maintained or improved further at follow-up. Additional support for these results comes from self-monitoring changes (i.e., reduced negative cognitions) shown by Zakaria, Mike, and Sami and the fact that these participants no longer met the social anxiety disorder diagnostic criteria. Consistent with the speech task findings, endstate functioning improved for Zakaria, Mike, Sami, and Claudel. Despite these successes, Nella's responses revealed little or no improvement across baseline, treatment, and follow-up. Compared with these outcome findings, the results of the working alliance and comfort with treatment ratings did not distinguish between those who did or did not improve with treatment. The working alliance ratings were consistently high and comfort ratings increased over time for all participants. In contrast, ratings of satisfaction with treatment were high for all participants except Nella, who showed little or no improvement across all indicators.

Before discussing the findings further, two caveats should be mentioned. The research design was a quasi-experimental single-case design with replications across

cases, and not an experimental multiple baseline design across participants, as originally planned. The implication of this modification is that causal inferences cannot be made. However, confidence that treatment may have promoted change for participants who improved is based on at least two aspects of the study: (a) social anxiety tends to be very stable over time, so change is difficult to achieve, and (b) replication of a similar pattern was found for 3 participants. Although the present study involved a high attrition rate compared with similar CBT treatment offered face-to-face, the 3 dropouts appeared to have similar scores compared with treatment completers on most of the initial interview and Session 1 variables. This suggests that these variables did not influence participants' decision to complete treatment. Moreover, the dropouts did not appear to differ from treatment completers in terms of their social anxiety history. However, the 3 dropouts were male. It is possible that gender influenced the attrition due to perceived gender roles (Snell, 1989). For example, treatment involves exposing oneself to anxiety and men may see their anxiety as not consistent with their gender role, leading to attrition. In addition, the 3 dropouts appeared to have lower comfort with videoconferencing. It is possible that, had they stayed in treatment, their comfort would have increased over time, similar to what happened with most of the treatment completers. It is also possible that their lower level of comfort contributed to them leaving treatment.

Hypotheses

Anxiety during the speech task, duration of the impromptu speech task, and public speaking anxiety. With regards to the three hypotheses, anxiety during the speech task, duration of the impromptu speech task, and public speaking anxiety symptoms improved for 3 participants (Zakaria, Mike, and Sami), but did not change for Nella. Nella's lack of

improvement can be understood by the fact that she had the most severe anxiety at pre-treatment, and she was using alcohol and medication in order to cope with her social anxiety. Moreover, she reported that it was not until the ninth session that she began completing homework assignments as suggested. These conditions may have affected the likelihood of her benefiting from treatment. For Claudel, anxiety during the impromptu speech task reduced and its duration increased, but her public speaking anxiety remained the same. This suggests that she felt less socially anxious in response to the speech task situation and reduced her avoidance of this social situation. This can be explained by her perception of what was asked of her (i.e., demand characteristics), and/or by habituation to the impromptu speech task but not to other public speaking situations. These findings also suggest that her anxiety may still interfere with her daily life (i.e., lack of generalizability to other situations). Furthermore, at the 3-month follow-up, she reported public speaking anxiety symptoms that were in the clinical range (met social anxiety disorder diagnostic criteria).

Overall the results obtained for the first two hypotheses were consistent for 4 of 5 completers, but the results for the third hypothesis were not consistent with findings of other single-case studies of socially anxious individuals, where participants significantly improved and maintained their gains at 3-month follow-up on both speech task measures and on the public speaking anxiety measure (Heimberg et al., 1985). The inconsistent findings for the third hypothesis are likely due to Nella and Claudel's results; which, when taken individually, are consistent with the cognitive-behavioral research results and theory. Nella consistently did not show any improvement on any of the measures, which has been observed on individual participants in previous studies (e.g., Heimberg et al.,

1985). This is also consistent with cognitive theory in that no change is apparent on any of the variables (i.e., cognitions) associated with social anxiety (i.e., anxiety, duration of speech task, and public speaking anxiety). Claudel's results can also be understood from a theoretical perspective. It is possible that changes have started to happen in a gradual way for Claudel, with some beliefs taking longer to change. For example, it is possible that the speech task represents a situation that she now feels she can face, and that gradually she will face other situations with less anxiety and avoidance, leading to decreased public speaking anxiety. It is also possible that she habituated to the speech task situation. Claudel's results are similar to what has been observed in a study of computer-assisted CBT for social anxiety disorder (Gruber, Moran, Roth, & Taylor, 2001). Gruber and her colleagues compared the efficacy of a hand-held computer as a therapeutic adjunct to CBT for social phobia, regular CBT, and wait-list. They found that by follow-up hand-held computer and regular CBT were equally effective in reducing symptoms and improving behaviors associated with social phobia. Their results also showed that participants in the hand-held computer group did not show statistically significant changes from pre-treatment to post-treatment on self-report measures but showed further improvement at 6-month follow-up (no 3-month follow-up was reported).

Questions

Daily social anxiety. A self-monitoring measure was used for exploratory analyses in order to provide information about participants' anxiety in their everyday life (Craske & Tsao, 1999). Because of the avoidance that is evidenced by socially anxious individuals, obtaining daily ratings of actual situations was difficult. In order to obtain an estimate of actual ratings, expected ratings were asked of participants. For all

participants, expected anxiety ratings were strongly and positively correlated with actual anxiety ratings in the three public speaking situations (see Appendix P). However, the psychometric properties of the self-monitoring measure need to be assessed in order to define the specific construct that was assessed by this measure. The results of exploratory analyses suggest that expected ratings of social anxiety in response to three types of public speaking situations (difficult, moderate, mild) monitored before, during, and after treatment improved for 3 (Zakaria, Mike, and Sami) out of 5 participants. This is consistent with the results obtained by these participants for the three hypotheses.

For Zakaria, Mike, and Sami, the results suggest a delayed association between treatment and change in anxiety in different situations, with the mild situation decreasing first, the moderate situation decreasing second, and the difficult situation decreasing last. This cannot be compared with previous research literature because this type of self-monitoring has not been used before. The order of change in situations of different degree on each participant's hierarchy can be explained by the gradual nature of the work done in treatment. This is consistent with the cognitive-behavioral model of social anxiety (Beck & Emery, 1985). However, those associations may have been influenced by history and maturation (i.e., changes may have happened due to external context or naturally), but this is less likely given that the same pattern was observed across 3 participants.

At least one participant (Claudel) showed almost no decrease in her expected ratings of her three social situations despite less avoidance and increased participation in public speaking situations. Nella showed minimal decrease in her moderate situation between post-treatment and follow-up. From a theoretical perspective, it is possible that

Nella and Claudel's beliefs about public speaking have started to be challenged, and this may have translated in less avoidance. However, for them to adopt different beliefs about public speaking situations, more evidence and further exposures may be needed. This is consistent with Nella's report that in-session exposures felt "not as real," and why Claudel indicated a need for more sessions and more exposures in their post-treatment comments. Analysis of the self-monitoring data of expected situations, although promising, must be considered tentative. Additional research is needed for more solid conclusions.

Negative cognitions. In exploratory analyses of negative cognitions, ratings were stable or decreased over the course of treatment for all participants. Consistent with theory is Sami, who statistically and clinically significantly showed decreases in negative cognitions (i.e., public self-consciousness, fear of negative evaluation, and attributions). The participant who improved the least (Nella) changed the least on negative cognitions, which is consistent with the cognitive-behavioral model of social anxiety, in which negative cognitions are at the source of social anxiety and need to be modified in order for the anxiety to decrease (Beck & Emery, 1985). In contrast, Claudel showed no change in any of the three types of cognitions. However, she showed some statistical (i.e., statistically significant improvement on self-monitoring of expected anxiety for moderate situation between post-treatment and follow-up) and clinically significant change (i.e., clinically significant decrease in anxiety during speech task, clinically significant increase in speech task duration). This is not consistent with theory, which would not suggest that a change in anxiety and speech duration could occur without a change in cognitions. The lack of change in her cognitions may reflect a need for her to have a

longer treatment with more in-session exposures, as she expressed in the post-treatment interview. Longer treatment could result in an change in her cognitions.

The two other participants, however, offer a mixed picture. Zakaria and Mike showed statistical and clinically significant changes in their public speaking anxiety yet showed almost no change in public self-consciousness and fear of negative evaluation, and a decrease in their internal attributions (despite the low reliability of the internal attributions measure, the results show a decreasing trend). For Zakaria, the reason for the discrepancy between public speaking anxiety and negative cognitions may be related to Zakaria's culture. During sessions, Zakaria contrasted the North American culture with his culture of origin in terms of how less demonstrative people from his culture of origin are in front of other people, especially displays of disagreement, or boredom. If culturally Zakaria has learned to conceal these thoughts and emotions and does not necessarily associate this concealment with his public speaking anxiety, this could explain why his scores remained the same. It is possible that for him, a further decrease in these cognitions is not necessary in order to decrease his public speaking anxiety. For Mike, it is possible that he used subtle avoidance in some of his social interactions (e.g., psychoactive substances), which would have decreased the disputing power of exposures. Finally, for both Zakaria and Mike, it is possible that their negative cognitions (e.g., "I am frequently afraid of other people noticing my shortcomings") represented variables that were not closely related to their public speaking anxiety, which would explain the stability of their fear of negative evaluation and public self-consciousness scores, whereas negative self-statements (e.g., "When I can't think of anything to say, I can feel myself getting very anxious") may be more closely related to their public speaking anxiety.

Almost all the correlations suggesting a strong relationship between negative cognitions and social anxiety in the mild anxiety situation were positive, indicating that as anxiety decreased, negative cognitions decreased; and conversely, as anxiety remained the same, cognitions remained the same. These results are consistent with the cognitive-behavioral theory, which posits that anxiety is related to negative thinking, and that as negative thinking decreases, anxiety decreases. For one participant (Claudel), one strong correlation was negative, indicating that as anxiety decreased, negative cognitions increased. Claudel's results can be understood in light of the partial improvement that her ratings evidenced. More specifically, some of her anxiety decreased, but her negative cognitions did not decrease. This suggests that treatment may not have challenged her beliefs enough, or that treatment has started challenging her beliefs, and further exposure to social situations will contribute to her decreasing her negative thoughts and anxiety further.

Self-statements. Explorations of changes in negative and positive thoughts during the speech task revealed that there was a significant time effect for both (i.e., decrease in negative thoughts and increase in positive thoughts), and that 4 out of 5 participants (all except Nella) followed this pattern. Individual data showed that Claudel's negative thoughts increased at 3-month follow-up (but were still improved compared to her pre-treatment level), and that positive thoughts returned to initial interview levels for Mike, Nella, and Claudel. For Zakaria, Nella, and Sami, negative and positive thoughts followed patterns similar to their performance on the speech task (i.e., anxiety and duration). Mike and Claudel both decreased their anxiety and increased their duration on the speech task and, although positive thoughts returned to pre-treatment levels, their

negative thoughts were below pre-treatment levels (improved compared to pre-treatment). Results are therefore consistent with Beck and Emery's (1985) cognitive model of social phobia, in that change in negative thoughts occurs as anxiety decreases. Previous research has found that socially anxious individuals have more negative self-statements but similar positive self-statements than control groups (Stopa & Clark, 1993). This is reflected with the present findings, in that negative self-statements decreased and positive self-statements returned to pre-treatment levels.

Working alliance. Participants' perception of the working alliance was high throughout treatment (i.e., range from 189-252), which is consistent with or higher than results obtained by previous studies that involved videoconferencing (e.g., estimated range from 156-211, Ghosh et al., 1997; estimated range from 180-252, Hufford et al., 1999). This suggests that the working alliance was strong for the participants despite the mediation of videoconferencing. This is consistent with Bordin's (1979) conceptualization, in that the concepts of working alliance (i.e., task, goal, and bond) do not appear to depend on physical co-presence.

Working alliance was negatively correlated with daily social anxiety for Claudel and Sami, indicating that as social anxiety decreased, working alliance increased. This suggests that the working alliance was associated with treatment outcome for 2 out of 5 participants. Their results are consistent with the cognitive theory of social anxiety (Beck & Emery, 1985) in which working alliance is an important component, and with previous studies that relate working alliance to outcome (e.g., Horvath & Symonds, 1991). Zakaria and Nella obtained stable working alliance ratings during treatment, but at the same time Zakaria's anxiety decreased, and Nella's anxiety showed variability over the course of

treatment, leading to weak correlations. Mike's ratings of working alliance showed a slight increase early in treatment and remained stable, whereas his anxiety remained stable during most of the treatment phase, and showed a slight decrease late in treatment. The use of Pearson correlations was a stringent test to relate working alliance to change in outcome, which may explain why those 3 participants did not show strong relationships.

Client satisfaction and comfort. Satisfaction remained stable (Zakaria, Claudel) or increased (Mike, Sami), but decreased for Nella throughout treatment. Comfort remained stable (Zakaria, Nella, Claudel) or increased (Mike, Sami), throughout treatment. The present results for satisfaction are comparable to those obtained by Day and Schneider (in press; average was 5.97; *SD* = .92), despite the fact that Day and Schneider's study involved two-way videoconference, which offers a higher quality of picture and sound. The present results for comfort were also consistent with what Day and Schneider have reported (average was 5.13; *SD* = .93). Furthermore, also consistent with Day and Schneider's results, the present study observed that level of comfort with videoconferencing increased statistically significantly over time. It is interesting to note that Nella did not indicate improvement in anxiety during her speech task, its duration, or her public speaking anxiety, and her satisfaction reduced over the course of treatment. A decreased sense of satisfaction is clinically understandable, given that Nella was becoming aware that treatment was not working as much as she had hoped.

Satisfaction and comfort with videoconferencing were not associated with treatment outcome for participants except Sami (i.e., negatively correlated). It is possible that high satisfaction leads to better outcomes, or that high satisfaction ratings were due

to the improvement that Sami observed throughout treatment, or that some other variables account for this relationship.

Clinical Significance

Endstate functioning. Individual clinical significance was reported in order to provide clinically meaningful results to complement information about visually and statistically significant results, and to obtain a comparison with the non-clinical population in a meaningful context. A modified endstate functioning (Turner et al., 1993) was calculated in order to obtain information about the clinical significance of the change observed in individual participants. At 3-month follow-up, two participants reached a high endstate status, two reached a moderate status, and one stayed at a low status, indicating increasing improvements for 2 participants from post-treatment (Zakaria went from moderate to high; Claudel went from low to moderate). The moderate to high endstate status of four of five participants (80%) suggests that CBT for social anxiety disorder provided via videoconferencing can be efficacious from a clinical perspective. This is consistent with previous CBT studies, which have found that 85% of participants had made clinically significant gains based on clinicians interview ratings of improvement (e.g., Hope, Herbert, & White, 1995).

DSM-IV criteria for social phobia. At post-treatment, 3 participants (Zakaria, Mike, and Sami) no longer met the DSM-IV-TR (APA, 2000) criteria for social phobia, and this was maintained at 3-month follow-up. The fact that Nella's pre-treatment anxiety was severe, her use of psychoactive substances, her discomfort with videoconferencing, and her difficulty in performing exposures between sessions may explain why she did not benefit from the treatment to the same extent as other participants. Claudel showed some

improvement but met the diagnostic criteria for social phobia. The fact that she still met diagnostic criteria at 3-month follow-up is consistent with the hypothesis that Claudel did not appear to generalize some of the benefits from treatment to other social situations. Her post-treatment comments that treatment was helpful for her but could have been longer, with more in-session exposures supports this possibility.

Information on attrition and treatment evaluation was gathered by an evaluator not associated with the project. Of the 3 dropouts, one participant (Vu) reported that videoconferencing was not the main reason for him leaving treatment and that he would recommend it. However, Maxim did not recommend treatment via videoconferencing. This may be explained by his preference for a psychoanalytic form of treatment, his diagnosis of bipolar disorder, or his lack of satisfaction and comfort with therapy provided via videoconferencing. The other dropout did not answer the attrition questions.

All treatment completers except Nella recommended treatment via videoconferencing. The fact that Nella was also the participant who did not improve and whose satisfaction and comfort decreased over the course of treatment suggests that treatment via videoconferencing may not be efficacious for some people. However, her use of alcohol and medication in order to cope with social anxiety, her initial level of severity, and/or her satisfaction and comfort with therapy provided via videoconferencing may have affected treatment efficacy. Previous treatment studies have not reported information about those who did not benefit from therapy provided via videoconferencing. It is possible that there are unpublished studies that found such results, and the literature may be biased by the "file-drawer" problem. It is also possible that such individuals' results were hidden by group averages. Finally, it is possible that

the present results can be explained by similar reasons for failure in face-to-face treatments.

The present results are generalizable to people who suffer from social anxiety disorder and present with characteristics similar to those of the participants involved in this study (see participants' descriptions in Appendix E). Of note, both men and women as well as individuals from several cultural groups (e.g., middle eastern, Asian) participated in the study. However, the results suggest that the manualized CBT used in the present study, may not be efficacious for individuals with social anxiety disorder who use alcohol to decrease their anxiety. In addition, the generalizability of these results extends to contexts similar to the present study, in which volunteer participants are willing to participate in treatment via videoconferencing, and in which treatment is provided in the same or similar communities by a female therapist.

Strengths and Limitations

This study aimed at evaluating the efficacy of CBT provided via videoconferencing to individuals suffering from a circumscribed form of social anxiety disorder, public speaking anxiety. The strengths of this study include (a) attention to the most prevalent of anxiety disorders (social anxiety disorder), yet a circumscribed form (public speaking anxiety); (b) the use of an empirically supported manualized treatment (CBT); (c) the use of a single-case design with replications; (d) the use of several standardized outcome measures, which allowed comparison of results with norms and with other studies; (e) the use of videoconferencing technology over geographical distance; and (f) the analysis of treatment efficacy in a clinically meaningful way (visual analysis and clinical significance).

Like all research projects, this study has limitations. First, the generalizability of the findings has some limitations, because results of the present study cannot be directly applied to all socially anxious individuals. Although single-case designs examine performance of individuals rather than groups of persons, the ultimate goal is to discover generalizable relationships.

With the detailed descriptions of each participant, it is possible to speculate about the generalizability to other individuals with similar situations, using logical generalization. For example, one dropout (Maxim) and one treatment completer (Nella) stated that they would not recommend treatment via videoconferencing because they felt it impacted on the relationship with the therapist. It is therefore possible that videoconferencing influenced Maxim dropping out of treatment and Nella not benefiting from it.

Another aspect of the present research that affects generalizability is the fact that participants who responded to the advertisement knew the treatment was provided via videoconferencing, were not located in a remote area, and only one female therapist provided treatment. Consequently, further replications are needed with individuals with social anxiety disorder who are randomly assigned to a videoconferencing treatment. In addition, both male and female therapists should provide treatment. Finally, treatment location should vary between an urban and a rural location in order to establish the generalizability of the benefits to larger numbers of individuals. It is important to keep in mind, however, that great geographical distance may not be the only situation warranting the use of videoconferencing, and that other factors such as disability or lack of transportation resources may also warrant the use of this technology.

Second, the intervention may have promoted effects that are inconsistent across the 5 participants. The intervention was associated with statistically significant change with 3 participants (Zakaria, Mike, and Sami) and clinically significant change for 4 participants (Zakaria, Mike, Claudel, and Sami). The number of replications suggests that the intervention may have promoted change. The 2 participants who did not show statistically significant change across all three outcome measures and who still met diagnostic criteria at follow-up are women. It is possible that gender influenced the results at least in three ways. First, it is possible that Nella and Claudel reported more severe social fears than the male participants, similar to what others have found (e.g., Turk, Heimberg, Orsillo, et al., 1998), and that they maintained this higher severity over the course to the study. Second, although neither Nella nor Claudel said gender of the audience influenced them, it is possible that these two female participants were more comfortable in treatment because the audience was mainly female, resulting in less challenge to their beliefs. However, they both reported high levels of anxiety during in-sessions exposures, which suggests that this was not the case. Third, both Nella and Claudel reported in their post-treatment comments that face-to-face could have felt more "real," which may have resulted in their beliefs about social situations being more challenged during in-session exposures. It is also possible that gender was unrelated to Nella and Claudel's results, which would be consistent with previous studies where gender did not appear to influence responses to treatment (Fedoroff & Taylor, 2001).

Third, social desirability and demand characteristics, especially in socially anxious people and in the context where there is a dual role of the researcher and the therapist, may result in participants trying to please the experimenter. However, at least

two participants (Nella and Claudel) maintained high ratings for their expected social anxiety throughout the different phases of the study, suggesting that they provided their honest estimate of their anxiety. In addition, this was balanced with scores on a behavioral measure (i.e., speech task), and with measures administered by two other collaborators not involved in the study (i.e., Clinical Global Impressions scale and Post-treatment telephone interview).

Fourth, reactivity to the measures can be identified as a limitation. However, the presence of various types of measures (e.g., self-report and impromptu speech task) decreased the chance of reactivity biasing the results. In addition, some measures were administered many times (i.e., self-monitoring) and others were administered only before and after treatment (i.e., speech task), decreasing the risk of reactivity of measures coloring all the results. For all participants except Zakaria, self-monitoring, speech task, and public speaking anxiety data did not change during the baseline period or between the initial interview and the pre-treatment assessment. Although Zakaria's speech task anxiety and duration decreased before treatment started, his self-monitoring of social anxiety remained stable during the 3-week baseline. It is therefore possible that Zakaria showed some reactivity to the speech task, but his answers to other measures did not appear to be influenced by reactivity to the measures.

Fifth, internal validity can be identified as a limitation because other variables than treatment, such as spontaneous remission of the disorder, maturation, and history could explain the changes observed. However, the participants included in this study suffered from social anxiety for a minimum of 3 years and up to 23 years, suggesting that

it is unlikely that the improvements that appeared across 4 participants during the present study were due to other factors.

Sixth, accurate measurement and operationalization of daily anxiety in social situations is difficult. This study was limited because it only examined expected ratings of anxiety, which cannot be compared with previous studies. The expected ratings also provide limited, unclearly defined, and incomplete information about individuals' experience. However, expected ratings were highly correlated with actual ratings (range from $r = .67$ to 1.0), which suggests that the expected ratings were positively associated with participants' actual social anxiety in specific situations, in the participants' natural environment. Furthermore, although participants were asked to provide a lot of ratings, the measures were adapted specifically for each individual, which may have contributed to the nearly perfect compliance of all participants for 11 weeks (77 days) over the course of the study.

Finally, the results of this study are limited to a 3-month follow-up. Especially in the context of a chronic disorder such as social anxiety, longer follow-up periods are necessary in order to establish firmly that full remission has occurred.

Implications for Theory, Research, and Practice

To my knowledge, this is the first study to examine the efficacy of a manualized psychological treatment via videoconferencing for socially anxious individuals. Social anxiety has not received as much attention from researchers as other anxiety disorders (Stein, 1995). However, because the population of socially anxious individuals is large, the disorder chronic, and its consequences severe, it is especially important to pay

attention to ways to improve access to treatment, and to determine whether technology is a potential way to attain this goal.

In terms of theory, this study suggests that cognitive theory and CBT, which were initially designed with a face-to-face context in mind, can expand beyond the confines of the therapist's office and be applicable to videoconferencing. Information gathered on participants' cognitions indicates that cognitions changed for one of the participants who improved on social anxiety measures (Sami). The three other participants who improved offered a mixed picture in terms of change in their cognitions despite showing an improvement on social anxiety. This may be explained by cultural beliefs (Zakaria), the use of subtle avoidance during some exposures (Mike), and the need for further disconfirmation of fears before beliefs are modified (Claudel). Cognitions did not change for the participant who did not improve on social anxiety measures (Nella). Her results are consistent with the theory that posits that decreases in negative cognitions will co-occur with decreases in social anxiety. The reasons why they did not change may include her use of psychoactive substances, treatment non-adherence (lack of exposures outside of sessions before session 9), and/or her decreased satisfaction with treatment, and decreased comfort with videoconferencing. It is possible that all of those reasons acted as forms of avoidance, keeping Nella from involving herself in challenging her beliefs and benefiting from treatment. Finally, both Nella and Maxim did not recommend videoconferencing. Nella coped with her anxiety, in part, by using alcohol and medication, and Maxim had a concurrent diagnostic of bipolar disorder. The use of psychoactive substances and the diagnostic of bipolar disorder can contribute to maintaining strong negative cognitions related to social anxiety. It is possible that for

those 2 participants videoconferencing represented an additional distraction that contributed to them not challenging their negative cognitions in treatment. It is also possible that they required flexibility in treatment that this research project could not provide.

In terms of research implications, support for two of the three hypotheses in the present study suggests that CBT via videoconferencing has potential for treating public speaking anxiety. The results also suggest that this procedure can have lasting effects 3 months following the end of treatment. Future research should include comparative studies with experimental designs where groups of participants who receive CBT either via videoconferencing or face-to-face are compared. Possible predictors of outcome could be contrasted between the two groups (e.g., satisfaction with treatment, comfort with videoconferencing, gender of participants), as well as attrition rates and characteristics of the participants who drop out. In addition, future research could look at the changes in cognitions and how they are linked to improvement of social anxiety. This would lead to treatment focusing more precisely on the cognitions that have been found to be linked with decreased social anxiety. Such links could be assessed with participants from different cultures and between genders. The previous suggestions would contribute to efficacy research. When this is established, effectiveness research, which would focus on outcome obtained in clinical settings, should be performed. If efficacy and effectiveness research yield positive results, costs-effectiveness and cost-benefit analyses should also be performed, in order for programs using videoconferencing to provide an increased access to services to also be financially sustainable. Studies of organizational issues related to this mode of delivery may provide guidelines about how best to develop

and manage such a service. Finally, if supported by further research, videoconferencing training should become part of graduate education.

With regards to CBT efficacy via videoconferencing, further research should examine the mechanisms through which components of treatment (cognitive restructuring and exposure) produce improvement, specifically when treatment is provided via videoconferencing (i.e., exposure can take the form of looking at oneself while giving a presentation). Some studies (e.g., Taylor, Woody, Koch, et al., 1997) have pointed to the fact that cognitive restructuring and exposure represent different ways to incorporate corrective information. Further investigation is needed to support this conclusion in the videoconferencing context and understand how those two treatment components are similar or differ, both in face-to-face and in videoconferencing.

Participants' post-treatment comments about their experience also direct researchers and clinicians towards avenues of research and aspects of practice that they might have overlooked in the past. For example, two participants (Zakaria and Vu) reported having felt more at ease with videoconferencing than face-to-face. This may be explained by an increased sense of safety in treatment while experimenting successfully with both in-session and in-vivo exposures to social situations. It is possible that CBT may be enhanced by being provided via videoconferencing. This would need to be investigated in further studies.

In terms of clinical implications, this study provides preliminary information regarding the efficacy of CBT via videoconferencing for socially anxious individuals. This information can be useful for the development of clinical guidelines in the area of CBT via videoconferencing. Clinical guidelines are based on empirically supported

treatments, and results of single-case designs that involve at least three participants, along with other studies, can define an empirically supported treatment. This study can therefore provide clinicians with practical information on which they can base their work via videoconferencing. I am presently developing a manual describing such practical information, including recommendations for clinicians training. Generally, I found that my comfort with the videoconferencing technology came with training and experience. In addition, knowledge of the literature on psychotherapy via videoconferencing was necessary. Practical aspects such as detection of substance use prior to treatment sessions also need to be planned for (for example, clients should be informed prior to starting treatment that project staff at their location may inform the therapist of indicators of substance use).

Videoconferencing has been identified as a potentially effective way to deliver mental health services because it bridges geographical distance while maintaining the visual aspect of treatment. It is important to keep in mind that geographical distance may not be the only situation warranting the use of videoconferencing, and that other factors such as disability or lack of transportation resources may warrant the use of videoconferencing for mental health services. Canada's National Broadband Task Force (2001) recommended that all Canadian communities should be linked to interactive video applications by the year 2004. This is one example of the increased presence of technology in health care. The present research provides some empirical support for the use of videoconferencing in mental health.

All 5 participants reported that treatment had been useful for them, and that if videoconferencing was allowing others to gain access to such treatment, then it was a

modality they would recommend. When compared with results of previous face-to-face CBT studies, CBT via videoconferencing for social anxiety disorder appears similarly efficacious to face-to-face treatment for some, with the advantage of being more accessible. Considering all the participants, there was some support for treatment efficacy. The results provide a basis for increasing research about CBT via videoconferencing for socially anxious individuals in order to enhance access to treatment.

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APPENDIX A

Summary Tables of Studies Involving Psychosocial Treatment via Videoconference

Table A
Studies Involving Psychosocial Treatment via Videoconference

Study	Sample	Diagnostic/Problem	Treatment	Sessions	Concept Assessed
Wittson et al., 1961	Approx. 24 adults (4 groups)	(one group includes anti-social behaviors)	Group psychotherapy	24 total	Feasibility
Solow et al., 1971	199 adults	Paranoid psychotic, other disorders	Psychiatric interviews	1 per client	Feasibility
Dwyer, 1973	150 adults	Acute situational crisis, psychiatric disorder	Interview techniques, brief interventions, prolonged supportive and explorative therapy, prescribed drug therapy	2 to 20 per client	Feasibility
Dongier et al., 1986	50 adults	Wide range of disorders (specified)	-	-	Feasibility, user views
Kavanagh et al., 1995	-	Wide range of psychiatric disorders (unspecified)	Clinical interviews	-	Quality of services
Kaplan et al., 1997	2 adults	Personal and family issues	Psychoanalysis	150 per client	Quality of services

Continued

Study	Sample	Diagnostic/Problem	Treatment	Sessions	Concept Assessed
Manchanda et al., 1998	1 adult	Mixed anxiety and depressive disorder	Cognitive-behavior therapy	12 per client	Clinical and social outcomes, user views, administration
Mielonen et al., 1998	-	-	Family therapy, occupational counseling	188 hours total	Feasibility, advantages and disadvantages
Rendon, 1998	1 child	Oppositional defiant disorder with mixed emotional features	Cognitive-behavior therapy	16 per client	Acceptability and effectiveness
Day & Schneider, in press; Schneider, 1999	80 adults	Heterogeneous Community Center Population	Cognitive-behavior therapy	5 per client	Working Alliance Satisfaction, functioning, symptoms, complaints Comfort
Hufford et al., 1999	3 families (adolescent-mother)	Adolescents with epilepsy and mother	Glueckauf's Issue-specific family counseling model	6 per dyad	Comfort, distraction, therapeutic alliance
Bouchard et al., 2000	8 adults	Panic disorder with agoraphobia	Cognitive-behavior therapy	12 per client	Feasibility/effectiveness, therapeutic alliance
Cowain, 2000	1 adult	Panic disorder with agoraphobia and major depression	Cognitive-behavior therapy	12 per client	Feasibility/effectiveness

Continued

Study	Sample	Diagnostic/Problem	Treatment	Sessions	Concept Assessed
Glueckauf et al., 2002	3 families (adolescent-mother)	Adolescents with epilepsy and mother	Glueckauf's Issue-specific family counseling model	6 per dyad	Problem severity and frequency, social skills, therapeutic alliance, treatment adherence

Note. Dash indicates information not included in the articles by the authors

Table B
Psychosocial Treatment Studies via Videoconferencing: Design and Methodologies

Study	Design	Assessment Methods	Analyses	Conclusions
Wittson et al., 1961	Case study	Informal self-report	Professional observations	Procedure is technically feasible
Solow et al., 1971	Case study	Informal self-report	Professional observations	Diagnostic and therapeutic effectiveness approximating face-to-face interviewing
Dwyer, 1973	Case study	Informal self-report	Professional observations	Professionals responded to their experience positively
Dongier et al., 1986	2 groups (experimental and matched control)	Informal self-report, evaluation questionnaires	Professional observations, Statistical analyses	Can be an effective method of mental health care delivery
Kavanagh et al., 1995	Case study	Informal self-report	Professional observations	Positive – different but clinically acceptable
Kaplan et al., 1997	Case study	Informal self-report	Professional observations	Systematic consideration of indications and contraindications need to be performed before institution
Manchanda and McLaren, 1998	Case study	Informal self-report, BDI, DAS, MADRS, WAI	Visual inspection of scale results	Reduction of psychopathology, modification of dysfunctional attitude, no impairment of working alliance

Continued

Study	Design	Assessment Methods	Analyses	Conclusions
Mielonen et al., 1998	Case study	Informal self-report, rating scales	Professional observations, visual inspection of scale results and of pattern of use	Suitable for psychiatric work
Rendon, 1998	Case study	Informal self-report, CRS	Visual inspection of scales results	Success of single case, acceptable to children
Day & Schneider, in press; Schneider, 1999	3 groups (VCT, audio, in-person), control group, random assignment	VPPS, BSI, CSQ, GAF, GSI, TC, TSQ	Statistical analyses	No differences between 3 groups
Hufford et al., 1999	3 modalities (speakerphone, video-system, office), repeated measures	AVERS, AVEUS, ICS, ISF, ISS, WAI-Bond subscale	Visual inspection of scales results, content analysis	Preliminary support to use of telecommunication-mediated counseling with at risk adolescents with epilepsy
Bouchard et al., 2000	8 case studies	Daily diary, P & A, SE-CPAQ, DISS, STAI-T, WAI	Visual inspection, Statistical analyses, Clinical significance	Preliminary support to use of cognitive-behavior therapy over videoconferencing with panic disorder with agoraphobia
Cowain, 2000	Case study	Informal self-report, BDI, BAI	Professional observations, visual inspection of scales results	Can be an effective method of CBT delivery

Continued

Study	Design	Assessment Methods	Analyses	Conclusions
Glueckauf et al., 2002	Modified randomized controlled field experiment (speakerphone, video-system, office)	ICS, ISF, ISS, SSRS, modified WAI	Statistical analyses	Mode of delivery did not influence initial treatment outcomes or adherence

Note. AVERS=Audiovisual Equipment Rating Scale, AVEUS=Audiovisual Equipment User Survey, BAI= Beck Anxiety Inventory, BDI=Beck Depression Inventory, BSI=Brief Symptom Inventory, CRS=Conners' Rating Scales, CSQ=Client Satisfaction Questionnaire, DAS=Dysfunctional Attitude Scale, DISS=Sheehan Disability Scale, GAF=Global Assessment of Functioning Scale, GSI=General Severity Index, ICS=Issue Change Scale, ISF=Issue Frequency Scale, ISS=Issue Severity Scale, MADRS=Montgomery and Asberg Depression Rating Scale, P & A= Panic and Agoraphobia Scale, SE-PAQ=Self-Efficacy to Control a Panic Attack Questionnaire, SSRS=Social Skills Rating System, STAI-T=State-Trait Anxiety Inventory-Trait scale, TC=Target Complaint Method, TSQ=Therapist Satisfaction Questionnaire, VCT=Video Conferencing Television, VPPS=Vanderbilt Psychotherapy Process Scale, WAI=Working Alliance Inventory,

APPENDIX B

Summary of Measures Collected, Nature of Data, Data Points, and Analyses

Summary of Measures Collected, Nature of Data, Data Points, and Analyses

Measure	Nature of Data	Data Points Per Study				Total Number Of Data Pts	Analyses
		3 / 5-wk Baseline (interview/ pre-treat.)	12-wk CBT	1-week Post-Treat.	1-wk at 3-mth F-up		
SCID	Diagnostic of Social anx. disorder: y/n	1	-	1 (only social anxiety)	1 (only social anxiety)	3	DES
Social Anx. Diary . Maximum anx. in difficult, moderate, and mild situations	SUDS: 0-100	21	42	7	7	77	VI,ITS
Speech Task . Maximum anx.	SUDS: 0-100	2	-	1	1	4	DES,AN, EF
. Time	0-10 minutes	2	-	1	1	4	DES,AN, EF
. Negative thoughts	15-75	2	-	1	1	4	AN, DES

Continued

Measure	Nature of Data	Data Points Per Study				Total Number Of Data Pts	Analyses
		3 / 5-wk Bsline (interview/ pre-treat.)	12-wk CBT	1-wk Post-Treat	1-wk at 3-mth F-up		
. Positive thoughts	15-75	2	-	1	1	4	AN, DES
Personal Report of Confidence as a Speaker	Score: 0-30	2	-	1	1	4	AN,DES, EF
Clinical Global Impressions	Score: 1-7	-	-	1	1	2	EF
Public Self-Consciousness	Score: 0-21	1	S. 1, 3, 5, 7, 9, 11	1	1	9	DES, AN, COR
Fear of Negative Evaluation	Score: 0-30	1	S. 1, 3, 5, 7, 9, 11	1	1	9	DES, AN, COR
Attributional Style Questionnaire – Social Phobia items	Score: 3-21	1	S. 1, 3, 5, 7, 9, 11	1	1	9	DES, AN, COR

Continued

Measure	Nature of Data	Data Points Per Study				Total Number Of Data Pts	Analyses
		3 / 5-wk Bsline (interview/ pre-treat.)s	12-wk CBT	1-wk Post-Treat	1-wk at 3-mth F-up		
Working Alliance Inventory	Score: 36-252	-	S. 1, 3, 5, 7, 9, 11	-	-	6	DES, AN, COR
Client Satisfaction Scale	Score: 1-7	-	S. 1, 3, 5, 7, 9, 11	-	-	6	DES, AN, COR
Distance Communication Comfort Scale- V.	Score: 1-6	1	S. 1, 3, 5, 7, 9, 11	-	-	7	DES, AN, COR
Reaction to Treatment	Score: 4-40	-	Sessions 1 and 4	1	-	3	DES

Note. DES = Description; VI = Visual analysis; ITS = Interrupted time-series; AN = ANOVA; COR = Correlations with outcome measures; S. = Session; EF = Endstate Functioning. Distance Communication Comfort Scale – V = Distance Communication Comfort Scale – Video subscale. Dash indicates that no data was collected.

APPENDIX C

Advertisement

APPENDIX D

Telephone Screening Interview

Front End Script for Telephone Interview

Effectiveness of cognitive-behavioral therapy for social anxiety disorder delivered via videoconferencing

Name of potential participant: _____
Phone number: _____
Screened by: _____ Date: _____
Referral source: _____

Hello, may I talk to (potential participant) please?

(If not available, no message is left; calling from UBC; when is a good time to call?)

Hello, my name is Marie-Hélène Pelletier, I am calling from the Dpt of Counselling Psychology at UBC. Is this a good time to catch you?

You have left a message saying you are interested in finding out more about the research project that I am conducting about social anxiety. I am calling to give you a bit more information, so that you can decide if you want to participate in this study. Our conversation should last between 5 and 15 minutes. Is it OK?

The purpose of the project is to look at the effectiveness of an individual psychological treatment for reducing the symptoms of social anxiety, and the treatment is provided through videoconferencing.

The treatment itself is the same as what we provide when we are in-person, which has been shown to be effective for social anxiety. The particularity of this study is that we see and talk to each other through a TV screen. And the treatment consists of 12 weekly 50 minutes sessions.

There is a three-step assessment process that begins with a 15-minutes phone screen. If it appears from the phone conversation that the treatment program may be appropriate, I will schedule an assessment interview for you at UBC. The first interiew takes approximately 2-4 hours. We can't say whether of not you will be accepted for treatment until the full assessment is complete. Both assessment and treatment are free of charge. However, we ask you to complete a number of questionnaires and in-person assessments before, during, and after treatment to help us keep track of your progress. In addition, there will be short follow-up interviews 3 months after the end of treatment.

There are a few things we need to know about the referral and that will help us see how if can help you at this point. But before I ask my questions, is there any question I could answer for you at this point?

SECTION 1: INTRODUCTION AND SOCIAL ANXIETY DISORDER VS PD CRITERIA:

How would you describe your problem?

_____
_____
_____
_____

Do you currently have times when you feel a sudden rush of intense fear of discomfort? Y/N

If yes, in what kinds of situations do you have these feelings?

_____
_____

Do you ever have these feelings come from "out of the blue", for no apparent reason, or in situations where you did not expect them to occur?
Y/N

*Currently, are they mostly unexpected, or triggered? (circle)

If triggered, what brings them on? FEAR of panic, or CONSEQUENCES of panic (loosing control, people seeing your anxiety, dying, etc.)

What symptoms/sensations do you typically experience during these unexpected panics?
**let them tell me, prompt after

Y Palpitations, pounding heart, accelerated heart rate
Y sweating
Y trembling/shaking
Y shortness of breath/smothering sensation
Y feeling of choking
Y chest pain/discomfort
Y nausea/stomach distress
Y chills or hot flushes
Y dizziness, unsteadiness, lighteadedness, faintness
Y feelings of unreality or being detached from oneself
Y numbing or tingling sensations
Y fear of dying
Y fear of going crazy
Y fear of doing something uncontrolled

Do you currently feel panicky in any situations or avoid them because you might not feel panicky if you avoid them?

Y/N

Do you feel fearful, anxious, or nervous in social situations where you might be observed or evaluated by others or when you are meeting with new people?

Y/N

If yes, what kinds of social situations do you fear and avoid?

_____
_____

How about:

Y public speaking
Y eating in front of others
Y writing in front of others
Y others:_____

On a 0-10 scale, how would you rate your public speaking anxiety? (need 7 minimum)

How many of these attacks/high anxiety situations in which 4 or more symptoms occurred in the past month: _____ Past 6 months: _____

When was the last time it happened? _____

Since you have started experiencing this anxiety, have you experienced at least one month of:

- persistent worry about becoming socially anxious? Y N
  . in the past month? Y N
-worry about implications of becoming socially anxious? Y N
  . in the past month? Y N
- significant change in behavior due to the anxiety? Y N
  . in the past month? Y N
  . tell me about it:

_____
_____

Are you mainly afraid of negative evaluation or criticism, and as result become anxious and panic (social phobia), or are you mostly afraid that you will panic and be embarrassed (panic)?

If I could guarantee that you won't have a panic attack/ high anxiety in a social situation, would you still be anxious? (yes = social phobia)

Do you experience panic attacks/high anxiety anywhere other than social situations? (e.g., when you're alone at home) (yes = panic)

How long have you had this (these) problems?

_____
_____

SECTION 2: OTHER ANXIETY

Are you experiencing any other problems with anxiety (e.g., uncontrollable worries, intrusive thoughts, etc.)? Y/N

If yes, which do you most want treated right now?

_____
_____

How has your mood been recently?

_____
_____

If low: Does your mood currently interfere with your daily routine?

_____
_____

SECTION 3 – MEDICATION

Are you currently taking any doctor prescribed medications to help you with your anxiety, mood, or sleep; such as Xanax, Alprazolam, Ativan, Serax, Clonazepam, Rivotril, Imipromine, Clomipramine, Luvox, Paxil, Prozac, or Fluoxetine? (dosage)

_____

_____

If yes, for what problem are you taking them?

_____

_____

Has your dosage been stable for the past 3 months?

_____

If NO, stop the phone screen: because this is a research study, we can only accept patients who have been stable on their anxiety or mood medications for at least 3 months. Please contact us at 822- 4919 when your dosage of _____ (Prozac, etc.) has been stable for at least 3 months and you are willing to keep your dosage stable during treatment.

If YES, "Do you agree to keep your anxiety or mood medication stable during treatment here?"
YES NO

SECTION 4 – OTHER PSYCHOLOGICAL TREATMENT

What other treatments have you had for this problem?

_____

_____

Have these treatments helped this problem at all?

_____

_____

If no, why not?

_____

_____

If yes, why are you seeking treatment with us now if the past treatment helped?

_____

_____

Are you currently receiving psychological treatment for any emotional or personal difficulties?

If YES, what kind of treatment for what kind of problem?

_____

Do you agree to be treated only by us for psychological problems related to your social anxiety?

YES NO

SECTION 5 – POSSIBLE EXCLUSIONARY CRITERIA

How much alcohol do you currently consume?

_____

_____

Do you use any type of street drug?

How about caffeine?

The treatment that we offer is relatively short term (12 1-hour sessions), and is very focused on changing habits of behavior related to emotional distress. We don't prescribe medications for patients, nor do we offer long term psychotherapy. Is such short term psychological therapy what you are seeking?

Are you currently available for weekly one hour appointments for 12 weeks?

Treatment will be offered on Saturdays and one evening during the week. How easy would it be for you to come to UBC every week on Saturday or in the evening?

Are you currently working or attending school?
Y/N

If not working: Are you currently on long term work disability status for health reasons?

Notes:

SECTION 6 – CONCLUSION AND DEMOGRAPHICS

Although treatment is free of charge, we ask you to complete a number of questionnaires and in-person evaluations before, during, and after treatment. Are you willing to complete these?

YES NO

Meets criteria for Social Anxiety Disorder: _____

At this point, I would like to book your first in-person interview. Please remember that we will be unable to say whether or not you will be accepted for treatment until the full assessment is complete.

Do you have any questions?

Demographics:
Birth date: _____
Address: _____
Phone number: (h)_____(w)_____ Preferred: _____
Holiday plans, moving plans, etc.: _____

How did you find out about our study: _____

Instructions for phone contact: _____

CBT (Cognitive Behavior Therapy): one-on-on therapy involving reframing and gradual exposure.

IF NOT SURE:
I will talk to my faculty advisor, Dr. Long, and I will get back to you regarding where we should go from here.

APPENDIX E

Participants' Descriptions

Zakaria

Zakaria was a married male in his thirties who had recently immigrated to Canada from the Middle East. He was working on a doctoral degree (yearly household income $40,000 to $59,000) and lived with his wife and their young child. He had seen a university counsellor for three sessions in the past year, but stopped attending because he did not find that the sessions were providing him with new perspectives. He denied using any medication or alcohol to deal with his anxiety, did not smoke, and drank 1 cup of coffee per day.

Since moving to Canada, Zakaria has suffered from public speaking anxiety. He reported having some minor symptoms before, but not to the level he had been experiencing in Canada. At the initial interview, his anxiety was moderately severe on the speech task (average time at the two pre-treatment assessments was 5.63 minutes, and average SUDS was 85), and was severe on a paper-pencil instrument (PRCS average score of 21).

The distress caused by Zakaria's public speaking anxiety and tendency to "keep silent" involved both professional and social situations and represented the "biggest concern in his life." Professionally, he felt that he could not speak with confidence, which he attributed in part to his perception that his level of English is not as high as he would have expected it to be. He avoided talking or cut short his speech and feared that he would not be able to show his abilities to future employers. Socially, he had tried to join a club at the university in order to talk to people, but avoided speaking in fear of being identified as not intelligent or interesting, and only did manual work that did not involve social interactions. Zakaria reported becoming more isolated because of his public

speaking anxiety. He feared that his English would not be perfect, and people would compare him with other people from the Middle East with better English and conclude that he is not intelligent. Professionally, this meant that he would not be employed and would not be able to support his family. Socially, he perceived this as leading to isolation and failure to have a social life.

Zakaria's three main goals for treatment as stated during the in-person preliminary interview were (a) increase his confidence when talking in front of a group of people, (b) be able to express his opinion and not keep silent, and (c) be comfortable making more connections with people.

The diary included SUDS ratings of his social anxiety when giving a political/social presentation in front of four people that he considered of high level (difficult situation), his social anxiety when giving an opinion on any topic in front of his supervisor and colleagues (7 to 8) in the presence of a person from the Middle East with good English (Moderate situation), and his social anxiety when talking to friends (4 to 5) including a person from the Middle East with good English about political/social topics (Moderate situation).

Mike

Mike was a Caucasian male in his thirties who lived with his girlfriend. He was employed (yearly household income $ 40,000 to $ 59,000). Two years ago, he had attempted to join a group that practices public speaking, but he stopped attending because he found that the situation was making him too nervous and that he needed more gradual steps in order to reach his goal of being able to talk in front of people more comfortably. He did not have previous psychotherapy experience. Mike denied using medication or

alcohol to manage his social anxiety. He did not smoke and had less than 1 cup of coffee per week.

Mike suffered from public speaking anxiety since junior high school, when he was 12 years old. He had to give a class presentation and felt highly anxious. At the initial interview, his anxiety was very severe on the speech task (average time at the two pre-treatment assessments was 2.00 minutes, and average SUDS was 100) and on a paper-pencil instrument (PRCS average score of 27.5).

The distress caused by Mike's public speaking anxiety involved mainly work-related situations and represented an obstacle in his desire to advance his career. He wanted to be able to provide courses, which he did not feel able to do due to his anxiety. When attempting to talk in front of people, he felt an overwhelming rush of anxiety that pushed him to avoid the situation. He avoided public speaking situations and kept silent when he had to be present. If he spoke, he feared that he would show signs of anxiety and would therefore not sound intelligent or competent. He also feared that he would not have much to say.

Mike's three main goals for treatment as stated during the in-person preliminary interview were (a) to be able to talk with a lesser level of anxiety and be able to express himself, (b) to keep his thoughts clearer when in front of people, and (c) to decrease the intensity of his physical symptoms.

The diary included SUDS ratings of his social anxiety when giving a presentation in front of colleagues within a course (Difficult situation), his social anxiety when giving an impromptu speech for 2 minutes in front of 20 people while standing (Moderate

situation), and his social anxiety when making an announcement for 2 minutes in the cafeteria (Moderate situation).

Nella

Nella was an employed Caucasian female in her thirties (yearly household income $60,000 to $79,000) and was in a common-law relationship. She had previously sought various forms of help for her condition, however without success. At the time of the first assessment, she stated that she considered herself as a "severe case." She was coping with her anxiety by using Clonazepam (0.5 mg, approximately 3 times per week, before situations when she may have to talk in front of people) and alcohol. She reported having 15 to 20 drinks per week, and that she drank socially in order to feel less anxious. However, Nella denied any legal, work, or social problems due to her drinking. Nella reported smoking approximately five packs of cigarettes per year, and drinking three cups of coffee per day.

Nella explained that she had always had an "anxious personality," but that problems with public speaking anxiety became more apparent approximately 23 years ago, when she had to do class presentations at school. At the initial interview, her anxiety was extremely severe on the speech task (average time at the two pre-treatment assessments was 0 minute, and average SUDS was 100), and a paper-pencil instrument (PRCS average score of 26.5).

The distress caused by Nella's public speaking anxiety involved both professional and social situations. Professionally and socially, she feared that if she was asked to speak in front of people, the focus would be on her, she would feel embarrassed, and people would judge her negatively. As a result, she did not sit at the table in weekly meetings at work and never spoke, and avoided situations where she could be asked to

speak. She reported that in the past, she had dropped out of courses where class participation was required and had quit jobs where speaking in front of people was necessary. She also refused opportunities at work because of the necessity for her to talk in front of people. Overall, she felt her anxiety about public speaking made her dysfunctional in all areas of her life. Nella worried that she would blush and perspire, appear "not together," "not smart enough," that everyone would notice and that she would suffer from "deep humiliation." At the time of the assessment, Nella was able to attend necessary professional situations by taking Clonazepam and in social situations by taking Clonazepam and/or consuming alcohol. She agreed to come to treatment sessions without taking medication or other psychoactive substances and agreed to work towards not using them during exposure exercises.

Nella's three main goals for treatment as stated during the in-person preliminary interview were (a) to feel confident enough to do a speech despite some anxiety, (b) to feel less anxious applying for a job, and (c) to be able to sit in a group situation and feel that she does not want to leave.

The diary included SUDS ratings of her social anxiety when giving a formal talk at work, sitting close to people in the brightly lit conference room (Difficult situation), her social anxiety when sitting with 6 people at a formal dinner at someone else's place (Moderate situation), and her anxiety when expressing herself at lunch with her manager and other members of the team (Moderate situation).

Claudel

Claudel was a single female in her twenties who was a university student (yearly household income under $19,999) and lived with a roommate. She had never sought treatment for her condition, but had previous therapy experience. She had started

attending a self-development program one month prior to contacting us, which increased her awareness of her difficulty when talking in front of people. Claudel denied using medication or alcohol to manage her social anxiety. She did not smoke and had less than 1 cup of coffee per day.

Claudel had suffered from public speaking anxiety for 11 years. At the time, she moved to a new area and started attending a new school where she reported people were very judgmental. At the initial interview, her anxiety was very severe on the speech task (average time at the two pre-treatment assessments was 1.8 minutes, and average SUDS was 67.5) and on a paper-pencil instrument (PRCS average score of 29).

The distress caused by Claudel's public speaking anxiety involved both academic and social situations. Academically, she expressed that she wanted to contribute in class, but she was seldom able to speak because of her anxiety. She would cut short class presentations, contributing less than half of the time allowed. She developed the strategy of compensating with her written work. She wanted to work as a teaching assistant and to attend graduate school, but both involved public speaking, so she was putting off those goals. Socially, she had tried to attend some social gatherings, but experienced great anxiety and discomfort. Most of the time, she avoided situations when she may have to speak in front of people, or attended without participating. When speaking in front of people, she feared that she would blush, not have much to contribute, and if she spoke, she would make unintelligent comments. People would then think that she was dumb.

Claudel's three main goals for treatment as stated during the in-person preliminary interview were (a) to understand where her fear of public speaking came from, (b) to decrease her fear, be able to talk in front of people (e.g., express an opinion

in class) and become more confident about doing it, and (c) to be able to go to social settings where she did not know most people (instead of avoiding).

The diary included SUDS ratings of her social anxiety when giving a formal class presentation involving class discussion (Difficult situation), her social anxiety when expressing an idea or an opinion in class (Moderate situation), and her anxiety when expressing something about herself on the ferry in front of 4-5 people who were part of her self-development program (Moderate situation).

Sami

Sami was a single male in his twenties who immigrated to Canada from the Middle East with his family many years ago. He was a university student (yearly income under $19,999) and lived with his parents. He was on a waiting list to receive treatment at a university hospital, but wished to start working on his anxiety as soon as possible. He did not have previous psychotherapy experience. Sami denied using medication or alcohol to manage his social anxiety. He did not smoke or drink coffee.

Sami had suffered from public speaking anxiety for approximately 3 years. At that time, he reportedly had a panic attack when doing a presentation in a class. He stated that he was not anxious in front of people before that incident. Following this event, he became anxious in other social situations. He took Paroxetine for 2 months, but stopped because it did not seem to be effective for him. At the initial interview, Sami's anxiety was very severe on both the speech task (average time at the two pre-treatment assessments was 2.3 minutes, and average SUDS was 97.5), and on a paper-pencil instrument (PRCS average score of 27)

The distress caused to Sami by his public speaking anxiety involved both academic and social situations. Academically, he avoided taking classes where he would

have to do a presentation or participate in discussions. After seeing that this was a requirement in the syllabus, he would withdraw his registration to the class. This was problematic, because these classes were mandatory for him to complete his degree. His graduation was delayed for one year at the time of the initial interview due to this avoidance. Sami also reported that he quit a job where he had to talk in front of people, due to his anxiety. He felt that his anxiety and incapacity to express himself in front of others showed a lack of competency. He feared that people would notice that he was anxious and would think that he is "crazy and stupid." He feared that he would offend someone by saying something stupid and that they would therefore not like him. Socially, he found that he was anxious in front of friends. As a consequence, he avoided social gatherings or attended without actively participating.

Sami's three main goals for treatment as stated during the in-person preliminary interview were (a) to have more confidence in his ability to do presentations in front of others in classes, (b) to have more confidence in his ability to ask questions in class, and (c) to be more confident about social situations and experience less anxiety.

The diary included SUDS ratings of his social anxiety when giving a formal class presentation where the audience included people who were knowledgeable about the topic and who could criticize (Difficult situation), his social anxiety when asking a question in a specific high-level class (Moderate situation), and his anxiety when expressing an opinion or answering a question in front of his parents' friends (Situation #3).

Vu

Vu was a single male in his twenties who had immigrated to Canada from Asia many years ago. He was a university student and lived on his own. He had never sought treatment for his condition.

Vu had suffered from public speaking anxiety for 10 years, when he moved to Canada. At the initial interview, his anxiety was very severe on the speech task (average time at the two pre-treatment assessments was 1.5 minutes, and average SUDS was 92.5) and on a paper-pencil instrument (PRCS average score of 24.5).

The distress caused by Vu's public speaking anxiety involved mainly academic and professional situations. In both of those situations, he expressed that he wanted to say his opinion or defend himself, but he was seldom able to speak because of his anxiety. He would avoid public speaking, attend meetings without participating, and over-prepare presentations. Vu wanted to enter graduate school and felt that improving his ability to talk in front of people was necessary in order for him to succeed. He had tried to "throw himself" in public speaking situations, only to become more aware of his extreme anxiety. When speaking in front of people, Vu reported that he had a pounding heart and that he would shake, perspire, and have hot flushes. He feared that he would do something wrong, "make a fool of himself," and that people would criticize him.

Vu's three main goals for treatment as stated during the in-person preliminary interview were (a) to decrease the frequency to which he looses his train of thoughts when talking in front of people, (b) to decrease his physical symptoms, and (c) to increase his confidence in himself when talking in front of people.

The diary included SUDS ratings of Vu's social anxiety when saying his opinion in class when specifically asked (Difficult situation), his social anxiety when expressing

concerns or suggestions regarding the progress of the research project during meetings with his professor, the laboratory technician, and another colleague (Moderate situation), and his anxiety when expressing thoughts about an unfamiliar topic at his church meeting with 10 to 15 people present (Situation #3).

Vu came to three treatment sessions, and was unable to come to sessions for 5 weeks due to family (i.e., parents visiting), health, and academic reasons (i.e., ability to cope with his schedule and academic demands). He did not contact us, and did not respond to a letter asking him about his interest in continuing treatment. In his answers to the attrition questionnaire (see Appendix N), Vu stated that he withdrew from treatment due to scheduling problems.

Maxim

Maxim was a single Caucasian male in his twenties who lived on his own. He was a university student. Maxim had been diagnosed with bipolar disorder approximately 4 years ago. He was accepted in the present study on the basis of his self-report of being under medication and his mood being stable for 2 years, which was confirmed by his psychiatrist and supported at the two preliminary face-to-face meetings. He had never sought treatment for his social anxiety.

Maxim had suffered from public speaking anxiety for 14 years, when he started doing class presentations in school. At the initial interview, his anxiety was very severe on the speech task (average time at the two pre-treatment assessments was 0 minutes, and average SUDS was 100) and on a paper-pencil instrument (PRCS average score of 26).

The distress caused by Maxim's public speaking anxiety involved academic, professional, and social situations. In academic situations, he expressed that he experienced such anxiety about doing class presentations that he avoided them, to the

cost of decreasing his grades. Professionally, he feared that he would not be able to succeed if he was not able to at least introduce himself in front of people. Socially, he reported avoiding contacts with other people or people noticing his presence. When speaking in front of people, Maxim reported that he had an accelerated heart rate, that he was sweating, and that he had feelings of unreality. He reported that he was "scared to death," and that he feared he would "throw a tantrum and run out of the room." He would then look nervous and vulnerable, people would laugh at him and he would be ridiculed.

Maxim's three main goals for treatment as stated during the in-person preliminary interview were (a) to increase his confidence prior to giving a speech, (b) to decrease his sensitivity to the audience's reactions, and (c) to increase his confidence when expressing his opinion.

The diary included SUDS ratings of Maxim's social anxiety when giving a formal class presentation in front of 30 people (Difficult situation), his social anxiety when asking a question about repeating a demonstration in class (Moderate situation), and his anxiety when expressing the opinion of a small group in class (representing the thoughts of the group) (Situation #3).

Maxim came to three sessions but was unable to attend sessions for 4 weeks. After ending a telephone conversation abruptly, he did not contact us for 3 weeks, and responded late to a letter asking him about his interest in continuing treatment. Important shifts in his mood had an impact on his ability to attend sessions on a regular basis. During the abruptly interrupted telephone conversation, Maxim expressed some reservations about treatment and how he could benefit from it. One month later, he felt that he was responsible for not being able to continue treatment. He believed that his lack

of attendance in early treatment and failure to contact us on time to arrange for other sessions were due to other stressors he was experiencing and his low mood.

Alexander

Alexander was a Caucasian male in his thirties. He lived with his partner and was employed. He was also studying. Alexander had tried Bupropion during one month 6 months ago, but stopped after one month due to undesirable side effects. He reported having 20 to 25 drinks per week, and but that he did not drink prior to public speaking situations, in fear that he would have even less control. Alexander denied any legal, work, or social problems due to her drinking. He had seen a psychologist for his social anxiety during four sessions 5 months ago, which he found helpful. He could not continue due to financial reasons, and his anxiety came back when he stopped attending sessions.

Alexander had suffered from public speaking anxiety for as long as he could remember. He reported that his family moved a lot during his childhood, and that people in new schools would "judge him without knowing him." At the initial interview, his anxiety was very severe on the speech task (average time at the two pre-treatment assessments was 0 minutes, and average SUDS was 100) and on a paper-pencil instrument (PRCS average score of 28).

The distress caused by Alexander's public speaking anxiety involved mainly academic and social situations. In both of those situations, he expressed that he felt that the focus was on him and that he would lose control. He avoided situations where he would have to speak in front of people (e.g., class presentations), or endured them with great discomfort (e.g., introducing himself at the beginning of a class). Alexander believed that his fear was significantly impacting on his professional goals, as he had to take distance courses in order to avoid class presentations. He also worried that he would

not be able to hold a position in the field he was interested in if he did not managed his anxiety better. When speaking in front of people, Alexander reported that he had a pounding heart and that he would shake, perspire, have hot flushes, and have tingling sensations in his arm. He feared that he would not be able to speak normally, lose control, and that people would judge him as a failure. Alexander agreed to come to treatment sessions without taking medication or other psychoactive substances and agreed to work towards not using them during exposure exercises.

Alexander's three main goals for treatment as stated during the in-person preliminary interview were (a) to be able to do a presentation in front of people, (b) to decrease the intensity of his physical symptoms when talking in front of people, and (c) increase his confidence in expressing his opinion and to do it more often.

The diary included SUDS ratings of Alexander's social anxiety when giving a prepared speech in front of over 20 people on a technical topic that he does not know too much about (Difficult situation), his social anxiety when asking a question in a class of 20 people (Moderate situation), and his anxiety when expressing an opinion in a group of four to five people in class (Situation #3).

Alexander came to two treatment sessions, and dropped out after two sessions. His father, who lived in Europe, was terminally ill and Alexander wanted to be close to his father. He stated clearly that he was highly interested in the treatment, inquiring about the possibility of coming into treatment in the Spring. He initially agreed to do the Reasons for Attrition Telephone Interview, but was unable to make himself available prior to his departure for Europe.

APPENDIX F

Personal Report of Confidence as a Speaker

Social Anxiety Diary

Personal Report of Confidence as a Speaker (PRCS)

This instrument is composed of 30 items regarding your feelings of confidence as a speaker. After each question there is a "true' and a "false."

Try to decide whether "true" or "false" most represents your feelings associated with your most recent speech, then put a circle around the "true" or "false." Work quickly and don't spend much time on any one question. We want your first impression on this questionnaire Now go ahead, work quickly, and remember to answer every question.

1. I look forward to an opportunity to speak in public.	T	F
2. My hands tremble when I try to handle objects on the platform.	T	F
3. I am in constant fear of forgetting my speech.	T	F
4. Audiences seem friendly when I address them.	T	F
5. While preparing a speech I am in a constant state of anxiety.	T	F
6. At the conclusion of a speech I feel that I have had a pleasant experience.	T	F
7. I dislike to use my body and voice expressively.	T	F
8. My thoughts become confused and jumbled when I speak before an audience	T	F
9. I have no fear of facing an audience.	T	F
10. Although I am nervous just before getting up I soon forget my fears and enjoy the experience.	T	F
11. I face the prospect of making a speech with complete confidence.	T	F
12. I feel that I am in complete possession of myself while speaking.	T	F
13. I prefer to have notes on the platform in case I forget my speech.	T	F
14. I like to observe the reactions of my audience to my speech.	T	F
15. Although I talk fluently with friends I am at a loss for words on the platform.	T	F
16. I feel relaxed and comfortable while speaking.	T	F
17. Although I do not enjoy speaking in public I do not particularly dread it.	T	F
18. I always avoid speaking in public if possible.	T	F
19. The faces of my audience are blurred when I look at them.	T	F
20. I feel disgusted with myself after trying to address a group of people.	T	F
21. I enjoy preparing a talk.	T	F
22. My mind is clear when I face an audience.	T	F
23. I am fairly fluent.	T	F
24. I perspire and tremble just before getting up to speak.	T	F
25. My posture feels strained and unnatural.	T	F
26. I am fearful and tense all the while I am speaking before a group of people.	T	F
27. I find the prospect of speaking mildly pleasant.	T	F
28. It is difficult for me to calmly search my mind for the right words to express my thoughts.	T	F
29. I am terrified at the thought of speaking before a group of people.	T	F
30. I have a feeling of alertness in facing an audience.	T	F

Social Anxiety Diary
Self-Monitoring Form – Step 1
Peak anxiety in situations that occurred

Instructions: At the end of each day, record the peak anxiety in each of the situations you are monitoring. Use the 0-100 scale. If a situation did not occur that day, indicate N/A for not applicable.

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
no anxiety mild anxiety moderate anxiety severe anxiety very severe anxiety

Date	**Peak Anxiety in Situation #1**	**Peak Anxiety in Situation #2**	**Peak Anxiety in Situation #3**	**Type and dosage of medication**

Adapted from Hope, Heimberg, Juster, and Turk, 2000.

Self-Monitoring Form – Step 2
Expected anxiety for situations that did not occur

Instructions: At the end of each day, after recording your peak anxiety in each of the situations you are monitoring (Step 1), use the present form to provide an expected rating for the situations where you wrote "N/A" in the previous form. Use the 0-100 scale.

Note: This form should only show a rating for each of the cells of the previous table where you wrote N/A.

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
no anxiety mild anxiety moderate anxiety severe anxiety very severe anxiety

How anxious do you think you would have been if you had encountered situation #1, situation #2, and situation #3? (write your answers in the table below)

Date	**Expected Peak Anxiety in Situation #1**	**Expected Peak Anxiety in Situation #2**	**Expected Peak Anxiety in Situation #3**

Adapted from Hope, Heimberg, Juster, and Turk, 2000.

APPENDIX G

Self-Consciousness Scale – Revised – Public subscale

Fear of Negative Evaluation scale

Attributional Style Questionnaire – Social Phobia Items

Social Interaction Self-Statement Test

Self-Consciousness Scale – Revised Public Subscale (SCS-R-P)

Please answer the following questions about yourself by chosing a number from the scale below. For each of the statements, indicate how much each statement is like you by using the following scale:

3 = a lot like me
2 = somewhat like me
1 = a little like me
0 = not like me at all

Please be as honest as you can throughout, and try not to let your response to one question influence your response to other questions. There are no right or wrong answers.

_____ 1. I'm concerned about my style of doing things.

_____ 2. I care a lot about how I present myself to others.

_____ 3. I'm self-conscious about the way I look.

_____ 4. I usually worry about making a good impression.

_____ 5. Before I leave my house, I check how I look.

_____ 6. I'm concerned about what other people think of me.

_____ 7. I'm usually aware of my appearance.

Brief FNE

For the following statements please indicate how characteristic each is of you using the following rating scale:

1 = Not at all characteristic of me
2 = Slightly characteristic of me
3 = Moderately characteristic of me
4 = Very characteristic of me
5 = Extremely characteristic of me

_____ 1. I worry about what other people will think of me even when I know it doesn't make any difference.

_____ 2. I am unconcerned even if I know people are forming an unfavorable impression of me.

_____ 3. I am frequently afraid of other people noticing my shortcomings.

_____ 4. I rarely worry about what kind of impression I am making on someone.

_____ 5. I am afraid that people will not approve of me.

_____ 6. I am afraid that people will find fault with me.

_____ 7. Other people's opinion of me do not bother me.

_____ 8. When I am talking to someone, I worry about what they may be thinking about me.

_____ 9. I am usually worried about what kind of impression I make.

_____ 10. If I know someone is judging me, it has little effect on me.

_____ 11. Sometimes I think I am too concerned with what other people think of me.

_____ 12. I often worry that I will say or do the wrong things.

Attributional Style Questionnaire – Social Phobia (ASQ-SP)

Directions:

1) Read each situation and vividly imagine it happening to you.
2) Decide what you believe to be the one major cause of the situation if it happened to you.
3) Write this cause in the blank provided.
4) Answer the question about the cause by circling one number. Do not circle the words.
5) Go on to the next situation

SITUATIONS

YOU GIVE AN IMPORTANT TALK IN FRONT OF A GROUP AND THE AUDIENCE REACTS NEGATIVELY.

1. Write down the one major cause:

_____

_____

2. Is the cause of audience's negative reaction due to something about you or something about other people or circumstances?

Totally due to other People or circumstances 1 2 3 4 5 6 7 Totally due to me

YOU MEET A FRIEND WHO ACTS HOSTILELY TOWARDS YOU.

3. Write down the one major cause:

_____

_____

4. Is the cause of your friend acting hostile due to something about you or something about other people or circumstances?

Totally due to other People or circumstances 1 2 3 4 5 6 7 Totally due to me

YOU GO OUT ON A DATE AND IT GOES BADLY

5. Write down the <u>one</u> major cause:

_____

_____

6. Is the cause of the date going badly due to something about you or something about other people or circumstances?

Totally due to other People or circumstances 1 2 3 4 5 6 7 Totally due to me

Social Interaction Self-Statement Test (SISST)

Directions

It is obvious that people think a variety of things when they are involved in different social situations.

Below is a list of things which you may have thought to yourself at some time before, during, and after the speech task in which you were engaged. Read each item and decide how frequently you may have been thinking a similar thought before, during, and after the interaction. Utilize the following scale to indicate the nature of your thoughts:

1 = hardly ever had the thought
2 = rarely had the thought
3 = sometimes had the thought
4 = often had the thought
5 = very often had the thought

Please answer as honestly as possible

_____ 1. When I can't think of anything to say I can feel myself getting very anxious.
_____ 2. I can usually talk to people pretty well.
_____ 3. I hope I don't make a fool of myself.
_____ 4. I'm beginning to feel more at ease.
_____ 5. I'm really afraid of what they'll think of me.
_____ 6. No worries, no fears, no anxiety.
_____ 7. I'm scared to death.
_____ 8. They probably won't be interested in me.
_____ 9. Maybe I can put them at ease by starting things going.
_____ 10. Instead of worrying I can figure out how best to get to know them.
_____ 11. I'm not too comfortable meeting people so things are bound to go wrong.
_____ 12. What the heck, the worst that can happen is that they won't go for me.

Utilize the following scale to indicate the nature of your thoughts:

1 = hardly ever had the thought
2 = rarely had the thought
3 = sometimes had the thought
4 = often had the thought
5 = very often had the thought

_____ 13. They may want to talk to me as much as I want to talk to them.
_____ 14. This will be a good opportunity.
_____ 15. If I blow this conversation, I'll really lose my confidence.
_____ 16. What I say will probably sound stupid.
_____ 17. What do I have to lose? It's worth a try.
_____ 18. This is an awkward situation but I can handle it.
_____ 19. Wow – I don't want to do this.
_____ 20. It would crush me if they didn't respond to me.
_____ 21. I've just got to make a good impression on them or I'll feel terrible.
_____ 22. You're such an inhibited idiot.
_____ 23. I'll probably "bomb out" anyway.
_____ 24. I can handle anything.
_____ 25. Even if things don't go well it's no catastrophe.
_____ 26. I feel awkward and dumb; they're bound to notice.
_____ 27. We probably have a lot in common.
_____ 28. Maybe we'll hit it off real well.
_____ 29. I wish I could leave and avoid the whole situation.
_____ 30. Ah! Throw caution to the wind.

APPENDIX H

Client Satisfaction Scale

Distance Communication Comfort Scale – Video Subscale

Client Satisfaction Scale (C S S)

Please agree or disagree to each item below according to the following scale:

1	2	3	4	5	6	7
Very Strongly Disagree			Neutral			Very Strongly Agree

_____ 1. I am <u>not</u> pleased with my overall improvement.

_____ 2. My counselor really helped me.

_____ 3. I feel very positive about the progress I made.

_____ 4. I would seek help that was delivered through videoconferencing.

_____ 5. I do <u>not</u> see the counseling I received as being very helpful.

_____ 6. I would <u>not</u> go back to therapy for a future problem.

_____ 7. I would recommend therapy that was delivered through videoconferencing to a friend.

Distance Communication Comfort Scale – Video subscale (DCCS-V)

A number of statements are given below asking you how you feel about videoconferencing for psychotherapy. Although you may not have ever seen a therapist, please indicate how you anticipate you would feel about each of the statements.

The scale uses a seven-point scale, shown below, where 1 = strong disagreement and 7 = strong agreement. Read each statement and indicate how you generally feel using the given scale. There are not right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your general feelings.

1 2 3 4 5 6 7

Strongly Disagree Strongly Agree

You can indicate how you feel by choosing a number between 1 and 7. Circle the number that most closely represents how much you agree or disagree with the statement. There are no "correct" responses; it is your own views that are important.

It is important that you respond to every statement. Please circle the response that you think is the most appropriate.

1.Talking to a therapist on camera would make me uncomfortable.	1 2 3 4 5 6 7
2. I think meeting and talking with a therapist via videoconferencing would **not** detract from my ability to focus.	1 2 3 4 5 6 7
3. I think a therapist would have a hard time understanding me if we communicated via videoconferencing.	1 2 3 4 5 6 7
4. I think discussing problems with a therapist via videoconferencing would be fun and interesting.	1 2 3 4 5 6 7
5. I would probably have some difficulty in understanding my therapist if I met him/her only via videoconferencing.	1 2 3 4 5 6 7
6. I feel self-conscious when in front of a camera.	1 2 3 4 5 6 7
7. I would prefer to talk to my therapist using a videoconferencing system.	1 2 3 4 5 6 7
8. If we were communicating via videoconferencing, I believe it would be easy to maintain my attention.	1 2 3 4 5 6 7
9. It would be difficult to understand a therapist whom I only saw via videoconferencing.	1 2 3 4 5 6 7
10. Using videoconferencing to discuss problems with a therapist would be distracting.	1 2 3 4 5 6 7
11. I would feel quite comfortable discussing my problems with a therapist via videoconferencing.	1 2 3 4 5 6 7
12. I don't think I would like talking to a therapist whom I only met via videoconferencing.	1 2 3 4 5 6 7

APPENDIX I

Clinical Global Impression Scale

Treatment Credibility and Expectancies for Improvement

Videoconferencing Post-Treatment Telephone Interview

Reason for Attrition Telephone Interview

CLINICAL GLOBAL IMPRESSIONS*

Instructions: Complete Item 1 - *Severity of Illness* at the initial and subsequent assessments.
Items 2 and 3 may be omitted at the initial assessment by marking 0 - "Not Assessed."

CLINICAL GLOBAL IMPRESSIONS

1. SEVERITY OF ILLNESS
Considering your total clinical experience with this particular population, how mentally ill is the patient at this time?

0 = Not Assessed
1 = Normal, not at all ill
2 = Borderline mentally ill
3 = Mildly ill
4 = Moderately ill
5 = Markedly ill
6 = Severely ill
7 = Among the most extremely ill patients

THE NEXT TWO ITEMS MAY BE OMITTED AT THE INITIAL ASSESSMENT BY MARKING "NOT ASSESSED" FOR BOTH ITEMS

2. GLOBAL IMPROVEMENT - Rate total improvement whether or not, in your judgment, it is due entirely to drug treatment.

Compared to his condition at admission to the project, how much has he changed?

0 = Not assessed
1 = Very much improved
2 = Much improved
3 = Minimally improved
4 = No change
5 = Minimally worse
6 = Much worse
7 = Very much worse

3. EFFICACY INDEX - Rate this item on the basis of DRUG EFFECT ONLY.

Select the terms which best describe the degrees of therapeutic effect and side effects and record the number in the box where the two items intersect.

THERAPEUTIC EFFECT	SIDE EFFECTS			
	None	Do not significantly interfere with functioning	Significantly interferes with patient's functioning	Outweighs therapeutic effect
MARKED - Vast improvement. Complete or nearly complete remission of all symptoms.	01	02	03	04
MODERATE - Decided improvement. Partial remission of symptoms.	05	06	07	08
MINIMAL - Slight improvement which doesn't alter status of care of patient.	09	10	11	12
UNCHANGED OR WORSE	13	14	15	16
Not Assessed = 00				

* Reproduced from Guy, 1976.

The Clinical Global Impressions Scale (Guy, 1976).

Worksheet for Reactions to Starting this Treatment Program

(Adapted by Hope et al., 2000 from Borkovec & Nau, 1972)

Instructions: Circle a number that describes how you feel about each item, then indicate why you made that particular rating.

1. How logical does this treatment seem to you?

1 2 3 4 5 6 7 8 9 10
Not Logical ... Very Logical

Explanation for you rating:

2. How confident are you that this treatment will be successful in eliminating your fear?

1 2 3 4 5 6 7 8 9 10
Not Confident ... Very Confident

Explanation for you rating:

3. How confident would you be in recommending this treatment to a friend who had social anxiety?

1 2 3 4 5 6 7 8 9 10
Not Confident ... Very Confident

Explanation for you rating:

Use the following scale for questions 4 a, b, and c.

1 2 3 4 5 6 7 8 9 10
Not Severe ... Very Severe

4. a) Currently, how severe is your social anxiety? _____
   b) How severe do you expect your social anxiety to e immediately following completion of this treatment program? _____
   c) How severe do you expect your social anxiety to be one year after completing this treatment program? _____

Videoconferencing Post-Treatment Telephone Interview

1. What were your goals for treatment?

(a) Did your goals change? If so, how and why?

2. To what extent do you feel you achieved these goals?

3. Do you feel that anything about the therapy situation hindered achieving your goals? If so, what, please explain.

4. What did you think was most effective about therapy? (what helped the most) What helped the least?

5. Could you suggest ways the treatment could be improved?

6. Overall, how satisfied were you with the treatment on a 0-10 scale (0 = *not satisfied*; 10 = *very satisfied*)?

7. Have you had face-to-face therapy sessions before?

If yes: How did the experience compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

If no: How do you think the experience may compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

8. Did you experience any difficulties with the technology (a) picture, (b) sound, (c)feeling connected with the therapist, (d) meeting your needs.

9. Do you think videoconferencing is a good idea? Why? Why not?

10. What did you particularly like about using the technology?

11. What did you dislike about using the technology, if anything?

12. Would you recommend videoconferencing treatment for other individuals with the same problem?

13. Do you have any additional comments about your experience with treatment via videoconferencing you would like us to know about in order to improve treatment for others?

Reasons for Attrition Telephone Interview

1. What would you say are the reasons why you have decided to drop out of treatment?

2. What were your goals for treatment?

a) Did your goals change? If so, how and why?

3. To what extent do you feel you achieved these goals?

4. Do you feel that anything about the therapy situation hindered achieving your goals? If so, please explain.

5. What did you think was most effective about therapy, if anything? (what helped the most) What was least effective?

6. Could you suggest ways the treatment could be improved?

7. Overall, how satisfied were you with the treatment on a 0-10 scale (0 = *not satisfied*; 10 = *very satisfied*)?

8. Have you had face-to-face therapy sessions before?

If yes: How did the experience compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

If no: How do you think the experience may compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

9. Did you experience any difficulties with the technology (a) picture, (b) sound, (c)feeling connected with the therapist, (d) meeting your needs.

10. To what extent did the videoconferencing influence you leaving treatment on a 0-10 scale (0 = *not at all*; 10 = *a lot)*? Please explain.

11. What did you particularly like about using the technology, if anything?

12. What did you disliked about using the technology if anything?

13. Would you recommend videoconferencing treatment for other individuals with the same problem?

14. Do you have any additional comments about your experience with treatment via videoconferencing you would like us to know about in order to

improve treatment for others?

APPENDIX J

Consent Form

Demographics Questionnaire

List of Referrals for People not Accepted in the Study

Demographics

Code: _____

1. Age:

2. Gender:

3. Ethnicity:

4. Education:

5. Occupational status and approximate yearly household income:

Income:	. under $19, 999	. $60, 000 to $79, 999
	. $20, 000 to 39, 999	. $80, 000 to 99, 999
	. $40, 000 to 59, 999	. Over $100, 000

6. Marital status (single, married/living with partner, divorced, etc.):

7. Social anxiety duration:

8. Medication currently using for social anxiety:

9. Other medication currently using:

10. Psychotherapy in the past:

11. Smoking (cigarettes per day):

12. Alcohol (glasses per day) and drugs:

13. Coffee, tea, coke/pepsi, chocolate (cups per day):

List of referrals for people not accepted in the study

British Columbia Psychological Association	604-730-0522
University of British Columbia Counselling Center	604-822-3811
University of British Columbia Health Psychology Clinic Student Health Service	604-822-7011

APPENDIX K

Summary of Treatment Components

Treatment Integrity Checklist

Summary of Treatment Components

Basic elements of CBT for social anxiety protocol:

Psychoeducation:
- . anxiety and mood changes are natural
- . normal responses, learned alarms
- . 3 components of model of social anxiety (physiological, behavioral, cognitive)
- . diaries
- . use of Subjective Units of Discomfort Scale (SUDS)

Cognitive interventions:
- . cognitive distortions
- . automatic thoughts and rational responses

Situational exposures
- . fear and avoidance hierarchy
- . graduated exposure to increasingly challenging situations
- . decrease of safety signals

Interoceptive exposure
- . exposure to the sensations of anxiety
- . develop hierarchy of feared sensations
- . symptom induction exercises

Homework procedures
- . self-monitoring
- . exposures
- . importance of doing it daily

Relapse prevention
- . transfer of responsibility for treatment to client
- . development of a relapse plan: repeated exposures

Treatment components for specific sessions:

Session 1:
. psychoeducation
. initial cognitive restructuring

Session 2:
. review of homework assignment from session 1
. identification of cognitive distortions in automatic thoughts
. disputing automatic thoughts and developing rational responses
. homework assignment
. preparation for initiation of exposure simulations

Sessions 3-11:
. review of homework assignment
. exposure simulations
. development of homework assignments for the next week

Session 12:
. same as sessions 3-11
. relapse prevention

Treatment Integrity Checklist

The treatment program developed by Heimberg (1991, 2001) includes education, cognitive restructuring, and behavioral exposure. A detailed description is provided below.

Please rate the presence of the following aspects of CBT in the session by checking as present or absent giving a 0 – 3 rating, randomly sampling 3 5-minute segments of the session:

1. Identifying situations the client is avoiding _____

2. Selecting targets to approach _____

3. Identifying specific anxiety-related thoughts _____

4. Finding alternatives to such thoughts _____

5. Setting graded practice for homework _____

APPENDIX L

Pilot Study

The participant for the pilot study had been socially anxious for as long as he could remember. He reported experiencing great anxiety with respect to many social situations, including using the phone, talking to his supervisor, writing in front of other people, talking to authority figures, public speaking, and dating. When confronted with those situations, his symptoms and sensations included shaking, stomach distress, palpitations, chills, fear of doing something uncontrolled, and in extreme situations feelings of unreality. He wondered what people thought of him, and feared that he would start to stutter or offend people somehow, and that they would judge him negatively. As a consequence, and in an attempt to limit his anxiety, he avoided social situations almost on a daily basis.

The goals of the pilot study were (a) to determine the efficacy of data collection procedures, (b) to assess the participant's reaction to the videoconferencing, (c) to develop videoconferencing procedures equivalent to face-to-face (e.g., showing the model with the document camera instead of using a white board), (d) to gain experience in managing technical problems, (e) to develop clinical experience in providing treatment over videoconferencing, and (f) to determine the suitability of the facilities. Cognitive restructuring and exposure techniques were implemented similarly to when treatment is provided face-to-face over 13 1-hour individual treatment sessions. However, in-session exposures were not as frequent as they usually are in a face-to-face setting where colleagues can easily serve as audience members.

I diagnosed the participant in-person with generalized social anxiety disorder with the Structured Clinical Interview for DSM (First, Spitzer, Gibbon, & Williams, 1995). The diagnostic of social anxiety was confirmed by a registered psychologist. The

participant completed a daily social anxiety diary during a 3-week baseline period, 13 weeks of treatment, one week post-treatment, and one week for each of two follow-ups (1- and 3-month). In addition, the participant completed a self-report measure of social anxiety symptomatology (Social Phobia and Anxiety Inventory; Turner et al., 1989), and one self-report measure of cognitions (Fear of Negative Evaluation; Watson & Friend, 1969). In order to measure satisfaction, the client and the therapist respectively completed the Client Satisfaction Scale (Tracey & Dundon, 1988) and the Therapist Satisfaction Scale (Tracey & Dundon, 1988) after each treatment session. Client comfort with videoconferencing was assessed with the Distance Communication Comfort Scale (Schneider, 1999), which was administered once post-treatment. Treatment credibility and expectancies for improvement were assessed using the Borkovec and Nau (1972) four-item questionnaire, which was administered at session one and session four.

Visual analysis of daily SUDS in the social anxiety diary showed a decrease over treatment for the moderate situation, which was maintained at follow-up. A statistical analysis of anxiety levels across phases was conducted for each type of anxiety (average anxiety that day, anxiety in situation #1, and anxiety in situation #2) using the ITSACORR interrupted time-series analysis software program (Crosbie, 1993). There was no statistically significant change for any of the three diary anxiety measures (average anxiety that day, anxiety in situation #1, anxiety in situation #2) between the phases.

Self-ratings of social anxiety symptoms, as assessed with the Social Phobia and Anxiety Inventory (Turner et al., 1989) showed high variability in the three baseline assessments, and a slight decrease over treatment, which did not reach the non-clinical

range at post-treatment (pre-treatment: 111.45; post-treatment: 99.93). It should be noted that this instrument was not designed for repeated weekly administrations. Self-ratings of fear-related cognitions, as assessed with the Fear of Negative Evaluation (Watson & Friend, 1969) showed a slight decrease, which did not reach the non-clinically significant range (pre-treatment: 43; post-treatment: 37). Client and therapist satisfaction throughout treatment were stable and high (average of 5.6 on a 1-7 scale). Client comfort with the medium was high at the end of treatment. Treatment credibility and expectancies were high. Despite non-statistically and non-clinically significant differences in anxiety symptomatology self-report measures between pre- and post-treatment, the participant's diary data and satisfaction scores suggested that he saw an improvement in his social anxiety. This may have been due to the demand characteristics, but the lack of improvement on other measures weakened this hypothesis.

The post-treatment questionnaire (see Appendix I) was administered via telephone by a female senior doctoral student with no connection to the present research, who gathered the client's comments about the intervention. The participant expressed that he was overall "quite satisfied" with treatment, giving 9.5 on a 0 to10 point scale for his satisfaction. Although the participant reported having no previous experience with face-to-face psychotherapy, he mentioned that videoconferencing "put him at ease," and also "gave him a feeling of independence," in that it "made him do things for himself." He felt "guided," but "nobody was there holding his hand." He reported that "being on a TV screen is a bit daunting, and made him feel a bit self-conscious," but that this changed "after a few sessions," and that he felt more relaxed. The participant stated that he was interested in new technologies, and that he liked psychotherapy via videoconferencing.

The information included in the post-treatment questionnaire covered both themes speculated by Day and Schneider (in press), specifically the increased sense of responsibility and the feeling of safety. On the one hand, it is possible that those attributes were in fact a benefit for the efficacy of treatment, allowing the client to work more gradually and comfortably on his social anxiety through cognitive restructuring and exposure via videoconferencing. On the other hand, it is possible that videoconferencing was for him a form of avoidance, in that the participant may have engaged in some sort of disqualification of the exposure simulation experiences, thinking that the exposure simulations were not real. During sessions, and particularly during exposure simulations, I regularly checked with the participant what his level of anxiety was, and he did report high anxiety, which would not support this hypothesis. It appears more likely that the lack of statistically and clinically significant decrease on the Social Phobia and Anxiety Inventory (Turner, 1989) scores are due to insufficient use of in-session exposure, and to the lack of generalization to other social situations than the ones treatment focused on.

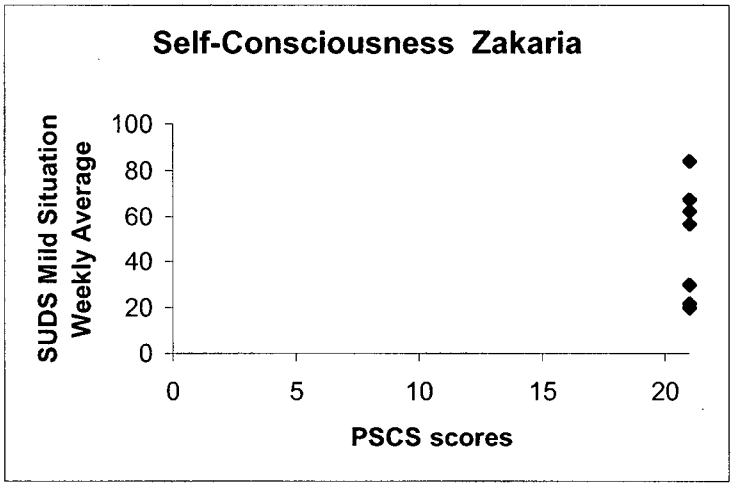
In the full study, participants completed the same questionnaires as in the pilot, except for the Social Phobia and Anxiety Inventory (Turner et al., 1989), which was replaced with the Personal Report of Confidence as a Speaker (Paul, 1966). This was explained by the fact that the pilot participant was suffering from generalized social anxiety, whereas the full-study participants suffered from public speaking anxiety as a circumscribed form of social anxiety disorder. The speech task (including positive and negative self-statements), public speaking self-report measures, as well as measures of public self-consciousness and attributional style were included as additional measures. The Therapist Satisfaction Scale (Tracey & Dundon, 1988) was not used in the full study,

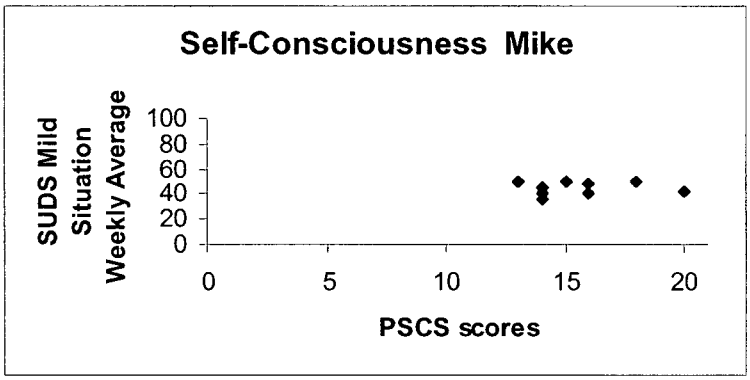
as I tended to rate my satisfaction consistently high, which I expected would be the same in the full study. I did however keep a log of my observations. Finally, the social phobia section of the Structured Clinical Interview for DSM-IV (First et al., 1995) was also administered post-treatment.

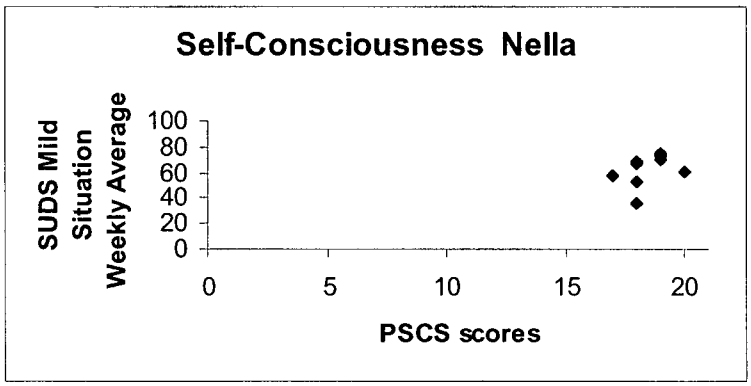
APPENDIX M

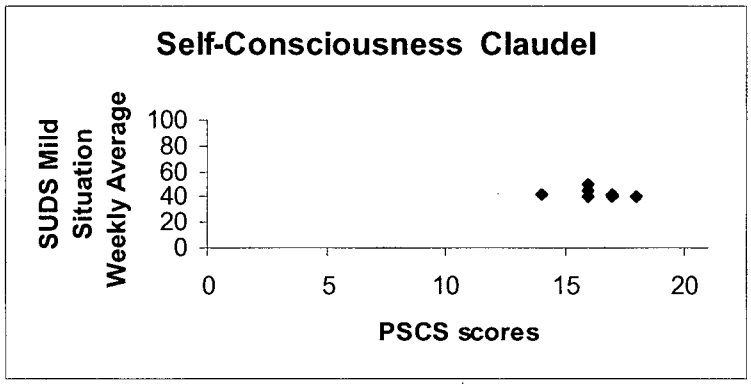
Scatter Plots for Correlations between Cognitions, Working Alliance, Satisfaction, and Comfort, and Self-Monitoring of Participants' Mild situation

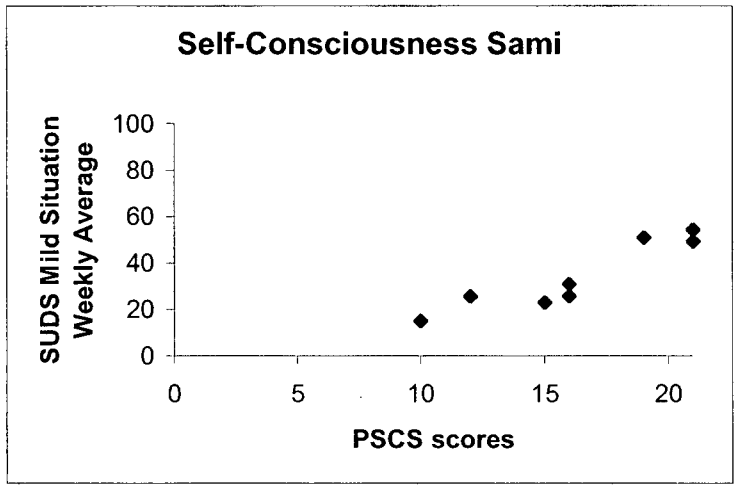
Scatter plots for correlations between cognitions, working alliance, satisfaction, and comfort and self-monitoring of participants' mild situation

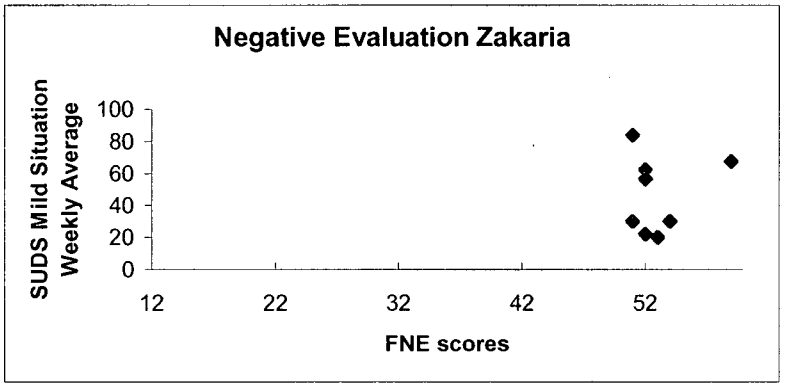


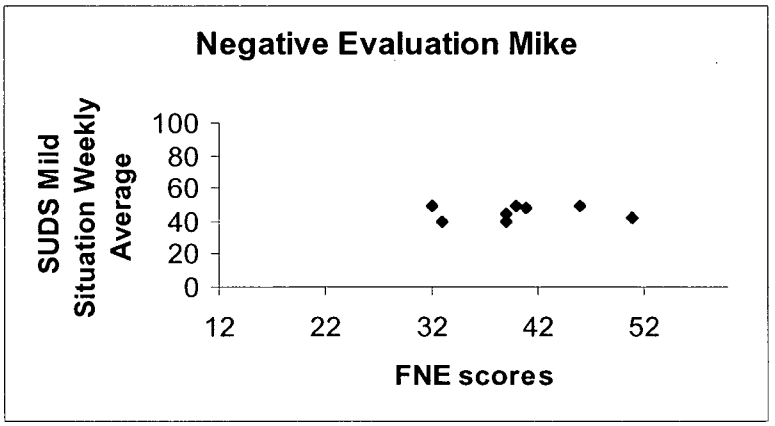





Self-Consciousness Claudel
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
0
5
10
15
20
PSCS scores


Self-Consciousness Sami
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
0
5
10
15
20
PSCS scores


Negative Evaluation Zakaria
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
12
22
32
42
52
FNE scores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SUDS Mild Situation Weekly Average
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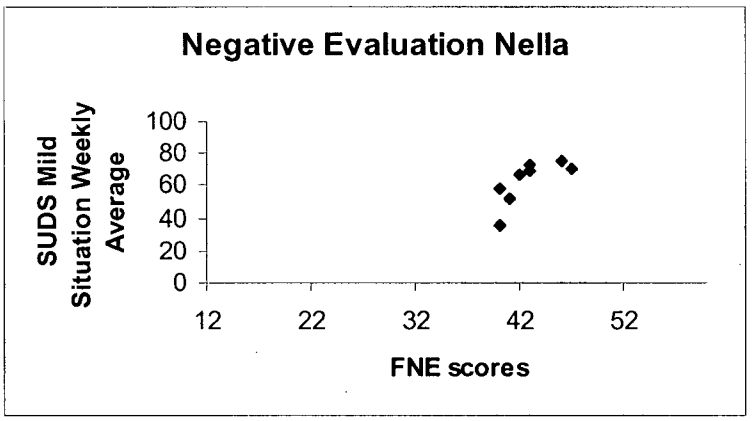
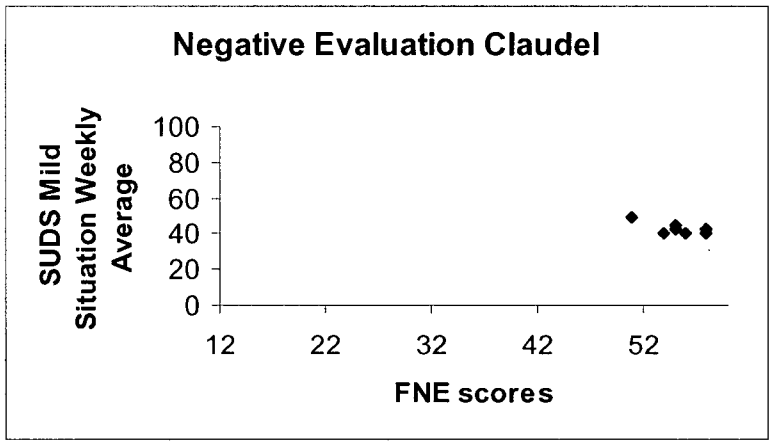
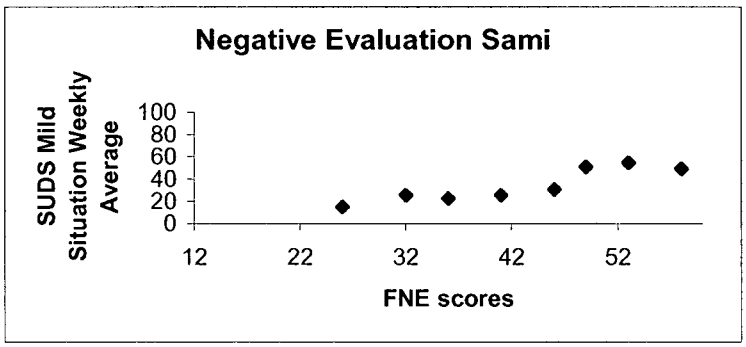
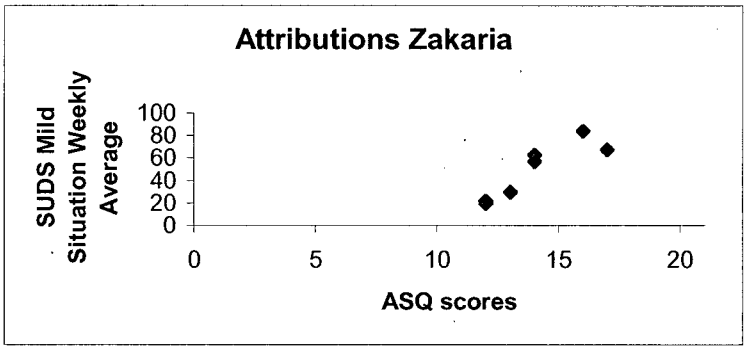
80
60
40
20
0
12
22
32
42
52
FNE scores


Negative Evaluation Nella
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
12
22
32
42
52
FNE scores


Negative Evaluation Claudel
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
12
22
32
42
52
FNE scores


Negative Evaluation Sami
SUDS Mild Situation Weekly Average
100
80
60
40
20
0
12
22
32
42
52
FNE scores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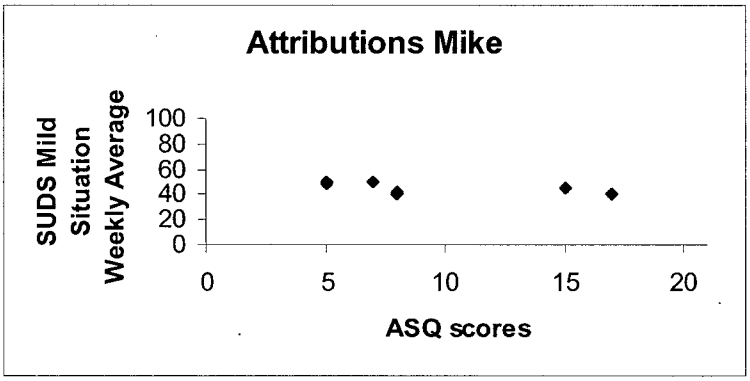
ASQ scores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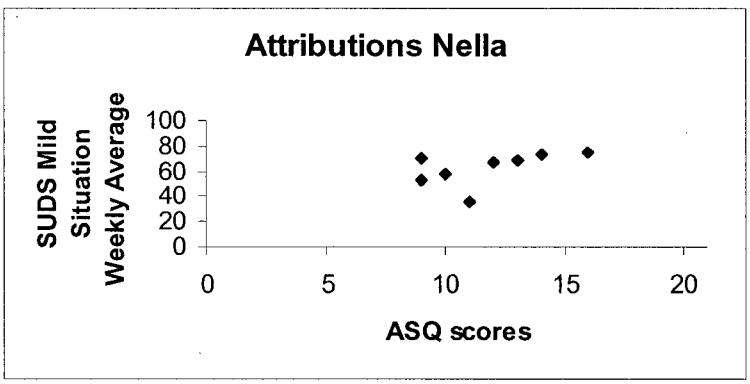
ASQ scores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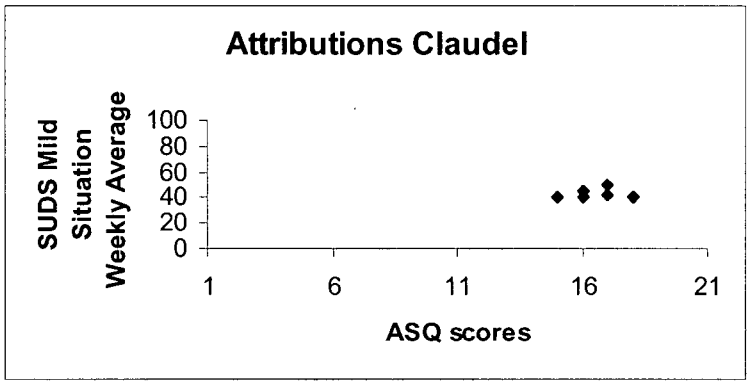
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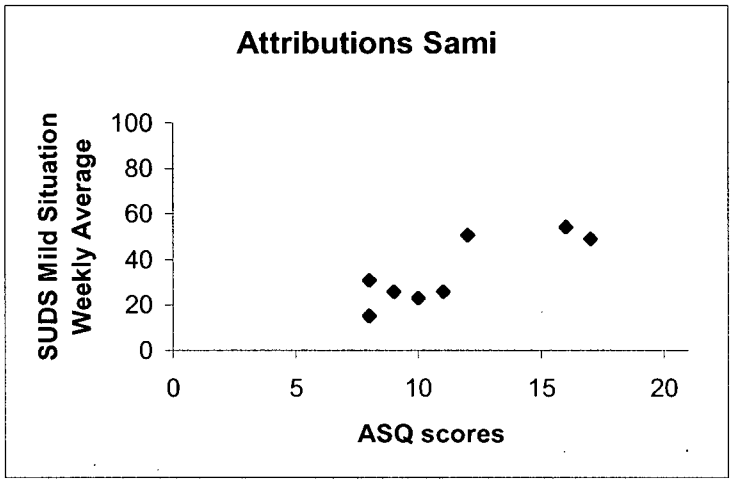
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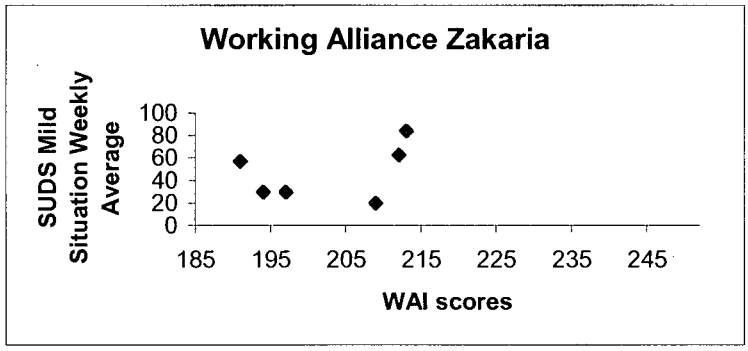
ASQ scores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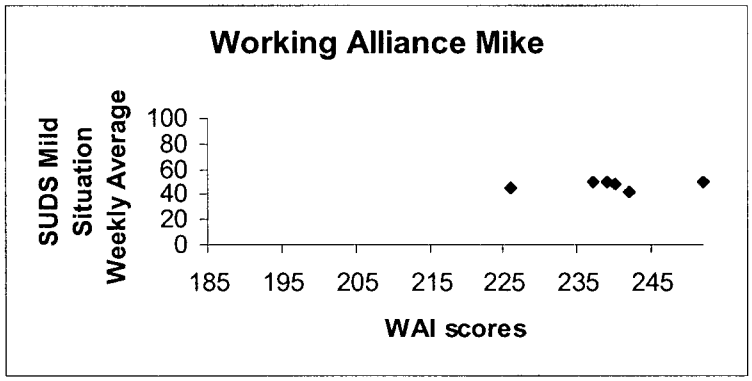
WAI scores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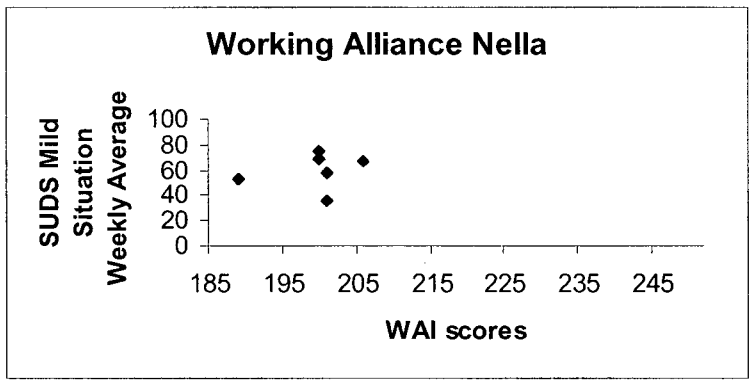
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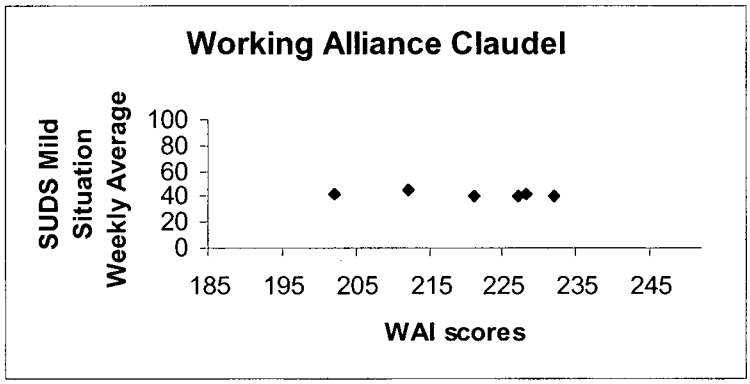
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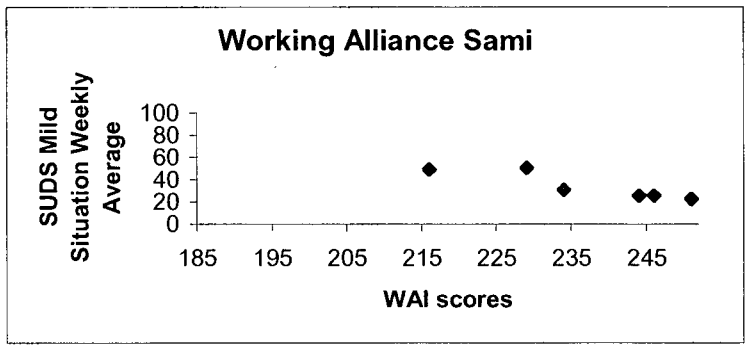
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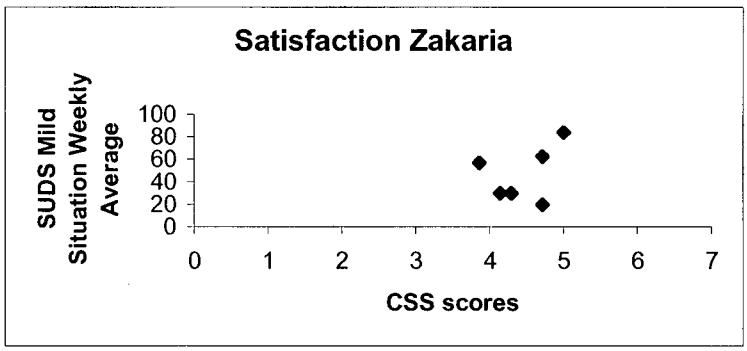
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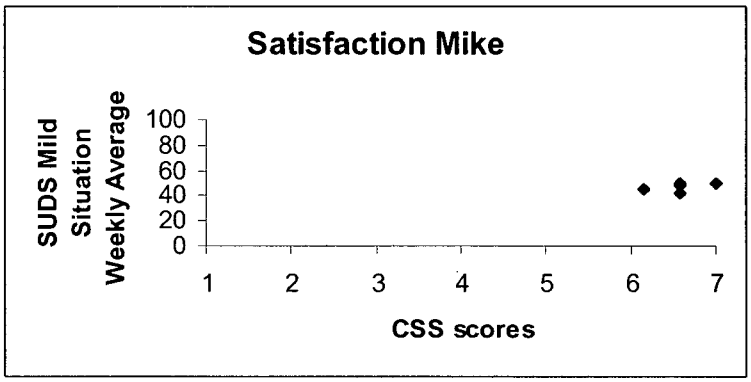
CSS scores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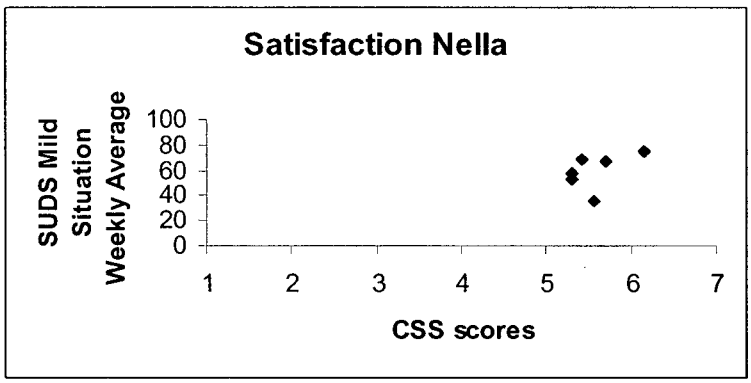
CSS scores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SUDS Mild Situation Weekly Average
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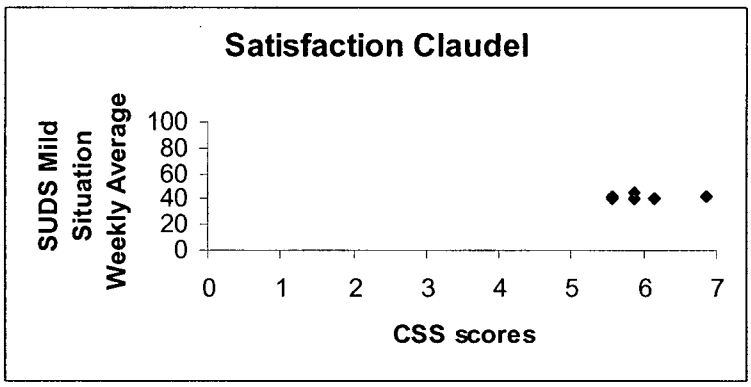
CSS scores


Satisfaction Claudel
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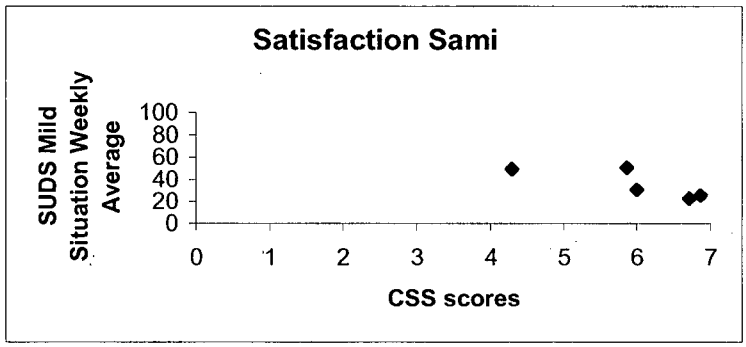
CSS scores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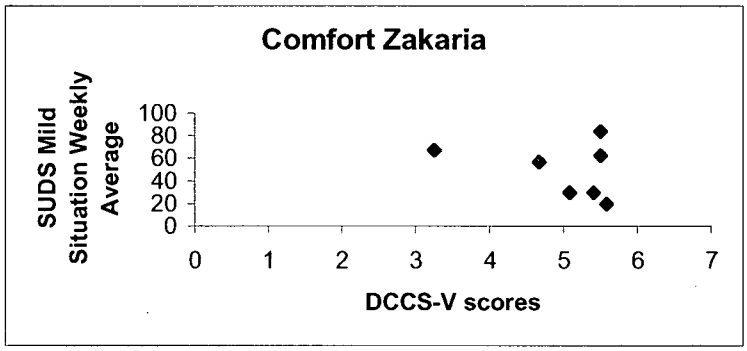
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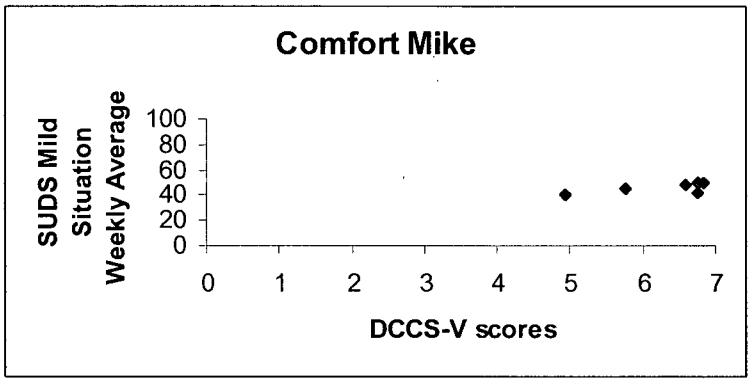
DCCS-V scores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SUDS Mild Situation Weekly Average
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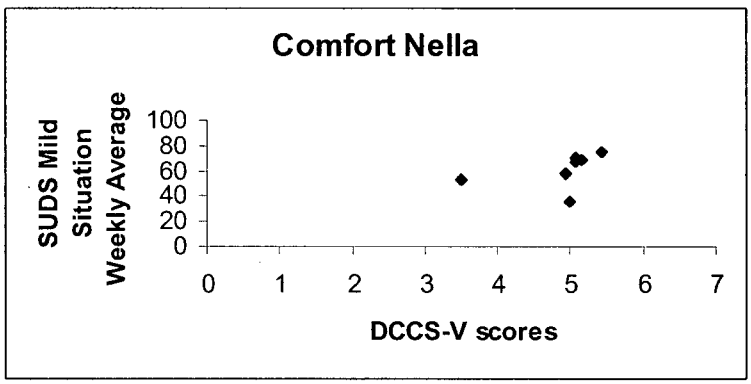
DCCS-V scores


Comfort Nella
SUDS Mild Situation Weekly Average
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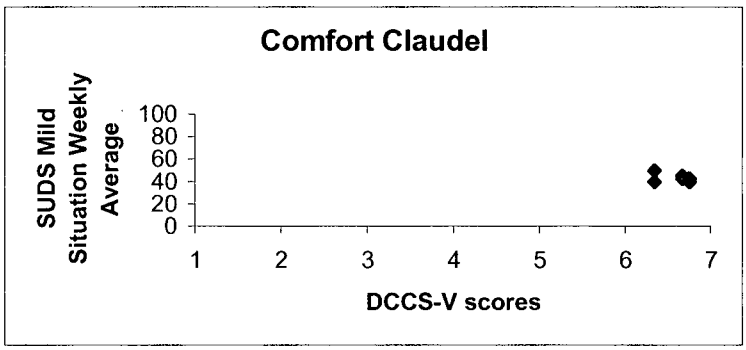
0
0 1 2 3 4 5 6 7
DCCS-V scores


Comfort Claudel
SUDS Mild Situation Weekly Average
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4
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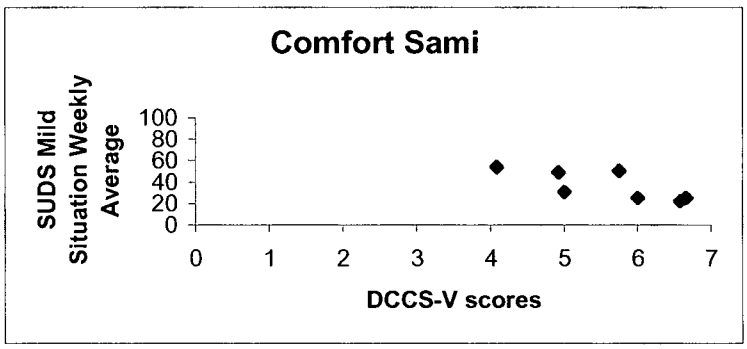
6
7
DCCS-V scores


Comfort Sami
SUDS Mild Situation Weekly Average
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1
2
3
4
5
6
7
DCCS-V scores

APPENDIX N

Responses to the Reasons for Attrition Telephone Interview

Responses to the Reasons for Attrition Telephone Interview

1. What would you say are the reasons why you have decided to drop out of treatment?

Vu: Time it was taking, inconvenient time, especially including traffic time.
Maxim: I got frustrated when I forgot to do the homework, the self-analysis rating, self-thought monitoring in particular.

2. What were your goals for treatment?

Vu: Reduce social anxiety.
Maxim: Gain more confidence in public speaking.

a) Did your goals change? If so, how and why?

Vu: No.
Maxim: Perhaps the goal became more realistic as I discovered how much anxiety public speaking caused me – a phobia even?

3. To what extent do you feel you achieved these goals?

Vu: In 3 sessions, no change.
Maxim: I got some awareness but didn't achieve any real goals.

4. Do you feel that anything about the therapy situation hindered achieving your goals? If so, please explain.

Vu: No.
Maxim: I think I was turned off (maybe subconsciously) by the homework – specifically the thought monitoring/analysis, where I would write down situations and try to catch biased thoughts. I had no motivation. If I had the ability to help myself, I would have done it a long time ago.

5. What did you think was most effective about therapy, if anything? (what helped the most) What was least effective?

Vu: Most: Helped me realize that there are ways to change the problem;
Least: It might not work
Maxim: Most: Conversation with the teacher (MHP)
Least: The worksheets where I would try to analyze things by myself; worksheets are very boring and frustrating. I doubt they would give me any inspiration and I don't think they help as they are impersonal and sort of condescending. I needed more.

6. Could you suggest ways the treatment could be improved?

Vu: Hearing from other people that it worked.
Maxim: Quicker pace to get to the exposure part – that is what would have been interesting but it is unfortunate I didn't get to that part yet.

7. Overall, how satisfied were you with the treatment on a 0-10 scale (0 = *not satisfied*; 10 = *very satisfied*)?

Vu: 7
Maxim: 4

8. Have you had face-to-face therapy sessions before?

Vu: No.
Maxim: Yes.

If yes: How did the experience compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

Vu: -
Maxim: Almost all face-to-face is much more effective I guess for me. Face to face is preferable to homework whereby the motivation, confidence for self-improvement is lacking. Face-to-face is more personal.

If no: How do you think the experience may compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

Vu: -
Maxim: -

9. Did you experience any difficulties with the technology (a) picture, (b) sound, (c)feeling connected with the therapist, (d) meeting your needs.

Vu: No.
Maxim: (a) No; (b) No; (c) Didn't feel 100% connected due to the videoconferencing (maybe only 80%); d) Wouldn't have preferred one on one with the therapist, even though there were no problems in communication

10. To what extent did the videoconferencing influence you leaving treatment on a 0-10 scale (0 = *not at all*; 10 = *a lot)*? Please explain.

Vu: 0
Maxim: 1. It didn't play that big a part, although looking back maybe if it wasn't used I would have had a stronger motivation to stay due to a more personal connection.

11. What did you particularly like about using the technology, if anything?

Vu: Less intimidating, minimal social exposure
Maxim: Could put my feet up in the room!

12. What did you dislike about using the technology if anything?

Vu: Nothing
Maxim: What I said previously; the audio delay was a bit distracting.

13. Would you recommend videoconferencing treatment for other individuals with the same problem?

Vu: Yes
Maxim: No, not unless it's due to distance. Face-to-face is always preferable.

14. Do you have any additional comments about your experience with treatment via videoconferencing you would like us to know about in order to improve treatment for others?

Vu: Good enough. Bigger TV would be more like real life.
Maxim: -

APPENDIX O

Treatment Integrity Ratings

Number of Tapes Rated, Number of Items Present, and Average Treatment Integrity Ratings per Participant

Participant	Number of tapes rated	Number of items present[a]	Rating (average across sessions)
Zakaria	6	16	2.75
Mike	6	17	3.00
Nella	5	13	2.85
Vu	2	5	2.60
Claudel	6	16	2.81
Sami	5	14	2.93
Maxim	1	1	3.00
Alexander	0	-	-
Total	31	82	2.85

Note. [a] Number of items present = Items rated 1, 2, or 3 on the treatment integrity checklist. A dash indicates that no data were available for rating.

APPENDIX P

Individual Participants' Correlation Coefficients between Actual and Expected Ratings for their Difficult, Moderate, and Mild Situations

Individual participants' Pearson correlation coefficients between actual and expected ratings for their difficult, moderate, and mild situations

Variable	Zakaria	Mike	Nella	Claudel	Sami
Difficult situation	.67	-	-	-	-
Moderate situation	.80	-	-	.87	-
Mild situation	.84	.90	.92	.95	1.0

Note. A dash indicates that the correlation could not be calculated because of insufficient data.

APPENDIX Q

Visual Analysis for Participants' Ratings of Expected Anxiety in Difficult, Moderate, and Mild Situations

Expected SUDS ratings for the difficult, moderate, and mild situations recorded daily are shown in Figure 6 to 10. Each situation was analyzed separately. Within each situation, each participant's data were analyzed individually.

Difficult Situation

During baseline across the 5 participants, the level of expected anxiety in the difficult situation was stable and high, at an average of 96.19. During treatment, there was an improving trend for Zakaria, whose average declined to 77.59. During post-treatment, there was no trend in Zakaria's data (i.e., anxiety ratings did not increase or decrease over time within the post-treatment phase), but his average declined to 64.17 compared to the treatment phase. During follow-up, despite a slight increasing trend, his average declined to 53.33 compared to the post-treatment phase. For Mike, there was a slight decreasing trend towards the end of treatment, and anxiety averaged 95.36. There was no trend during post-treatment and a decreasing trend at follow-up, and levels declined, reaching 65.71 and 52.86, respectively. Nella and Claudel's expected anxiety for the difficult situation remained high and stable throughout treatment, with averages of 94.71 and 93.57, respectively. Post-treatment and follow-up ratings were also stable, with Nella averaging 96.43 at post-treatment and 92.71 at follow-up, and Claudel averaging 91.43 at post-treatment and 93.57 at follow-up. Sami's ratings showed a decreasing trend in the last part of the treatment phase, and averaged 97.26. There was a decreasing trend at post-treatment and no trend at follow-up, with expected anxiety averaging 77.14 and 62.86, respectively. Overall, based on the visual analysis, there was an improvement in anxiety in the difficult situation between baseline and treatment for Zakaria, and between

treatment and post-treatment and between post-treatment and follow-up for Zakaria, Mike, and Sami.

Moderate Situation

During baseline, three patterns were observed for the moderate situation. Zakaria and Mike showed an increase in their expected anxiety ratings, averaging 77.66 and 84.76 respectively. Nella and Claudel showed stable ratings, averaging 92.86 and 72.28, respectively. Sami showed an improving trend during the baseline phase, with an average of 81.19. During treatment, there was an improving trend in level for Zakaria, whose average declined to 71.56. During post-treatment, there was no trend in Zakaria's data, and his average was 63.00. At follow-up, despite a slight increasing trend, his average declined to 42.00. For Mike, there was an improving trend in the last phase of treatment, and anxiety declined to an average of 80.22. There was no trend at post-treatment and follow-up, but levels declined further, reaching 68.57 and 63.57, respectively. Nella's expected anxiety for the moderate situation remained high and stable throughout treatment, post-treatment and follow-up, with averages of 83.14, 83.57, and 81.57, respectively. Claudel showed no trend during treatment, averaging 73.61. This remained stable at post-treatment, with an average of 73.57. No trend was present during follow-up (i.e., anxiety ratings did not increase or decrease over time within the follow-up phase), but her average declined to 53.29 compared to post-treatment. During treatment, Sami's ratings continued the decreasing trend initiated during baseline, reaching an average of 67.03. There was no trend in post-treatment and follow-up, but anxiety decreased, averaging 50.00 and 34.29, respectively. Overall, based on the visual analysis, there was an improvement in the moderate situation between baseline and treatment for Zakaria, an

improvement between treatment and post-treatment for Sami, and an improvement between post-treatment and follow-up for Zakaria, Mike, Claudel, and Sami.

Mild Situation

During baseline, two patterns were observed. Zakaria showed an increase in his expected anxiety ratings, averaging 79.17. Mike, Nella, Claudel, and Sami showed stable ratings, averaging 43.71, 46.13, 73.81, and 53.81, respectively. During treatment, there was an improving trend and a change in level for Zakaria, whose average declined to 47.20. During post-treatment and follow-up, there was no trend in Zakaria's data (i.e., anxiety ratings did not increase or decrease over time within the post-treatment and within the follow-up phase), and his average declined to 22.00 at post-treatment and remained at an average of 20.00 at follow-up. For Mike, there was no trend during treatment, and anxiety remained at an average of 47.50. There was a slight decreasing trend at post-treatment and anxiety averaged 31.43. At follow-up, there was a slight increasing trend, and anxiety averaged 36.67. Nella's expected anxiety for the mild situation showed variability during the treatment phase, but no increasing or decreasing trend was apparent during treatment; her average remained high at 59.56. At post-treatment, a slight decreasing trend was observed, with an average anxiety at 72.86. At follow-up, no trend was observed, but her average declined to 61.29. Claudel showed no trend throughout treatment, with her expected anxiety averaging 41.67. Anxiety remained stable at post-treatment and follow-up, averaging 40.00 and 44.29 respectively. During treatment, Sami's ratings showed a decreasing trend, with an average of 34.21. This trend continued in post-treatment, with anxiety averaging 15.00. At follow-up, no trend was observed, and anxiety declined to 3.57. Overall, based on the visual analysis, there was

an improvement between baseline and treatment and between treatment and post-treatment for Zakaria and Sami, and an improvement between post-treatment and follow-up for Nella and Sami.

APPENDIX R

Graphs for Cognitions, Working Alliance, Satisfaction, and Comfort Dependent Variables

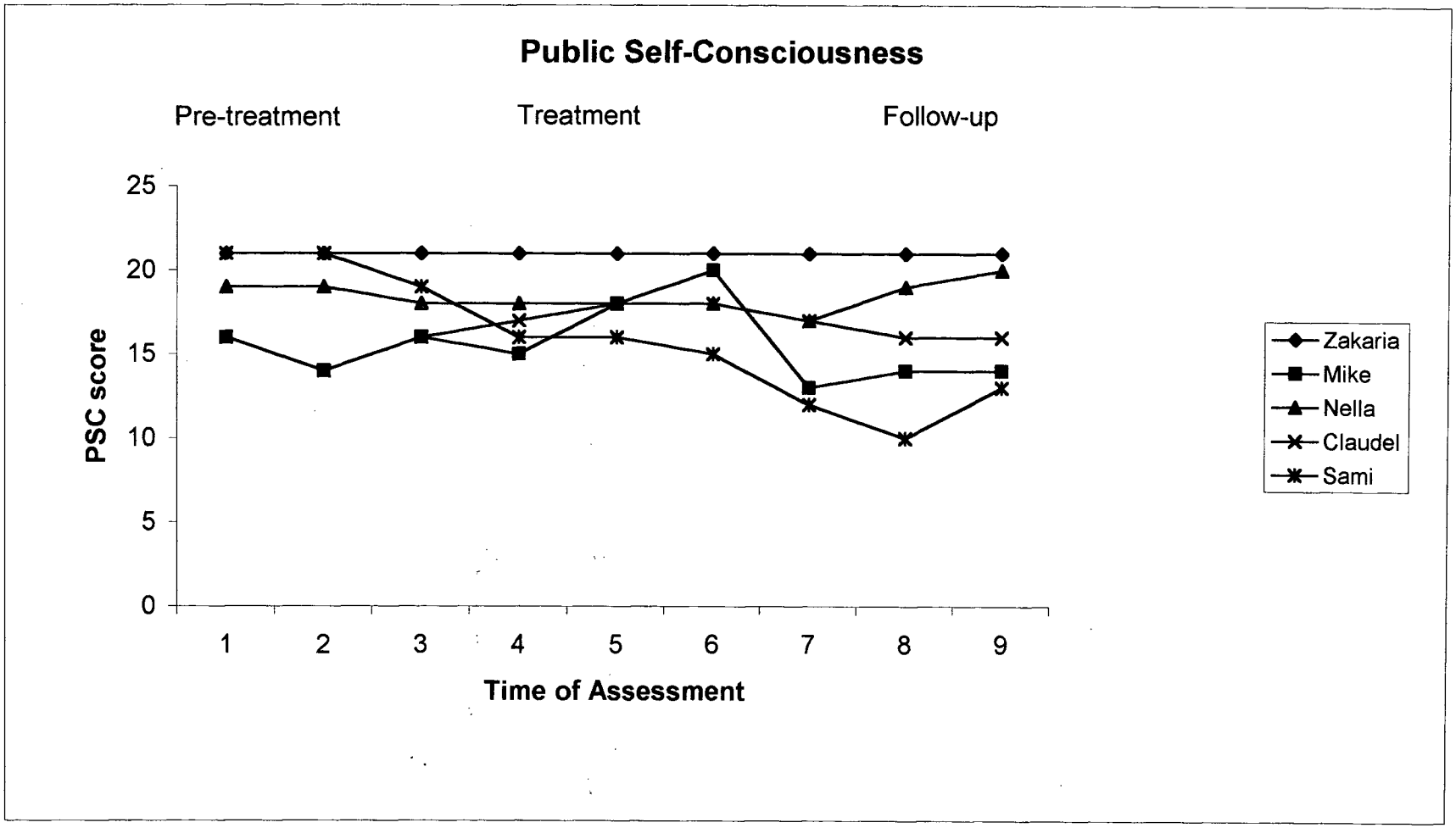

Figure 11. Individual participants' scores on the PSCS measured once during baseline, six times over the course of treatment, once at post-treatment, and once at 3-month follow-up.

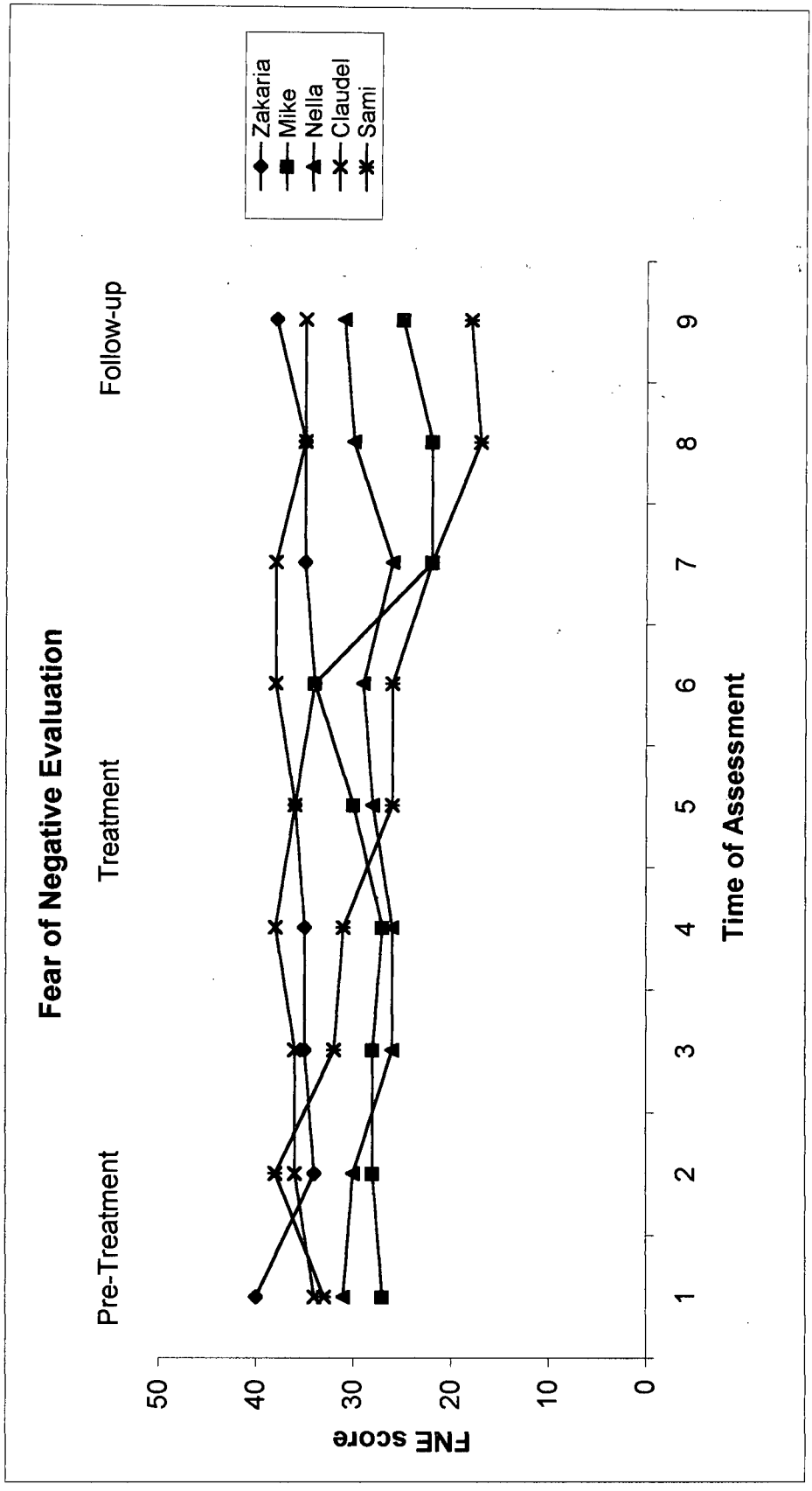

Figure 12. Individual participants' scores on the FNE (Fear of Negative Evaluation scale) measured once during baseline, six times over the course of treatment, once at post-treatment, and once at 3-month follow-up.

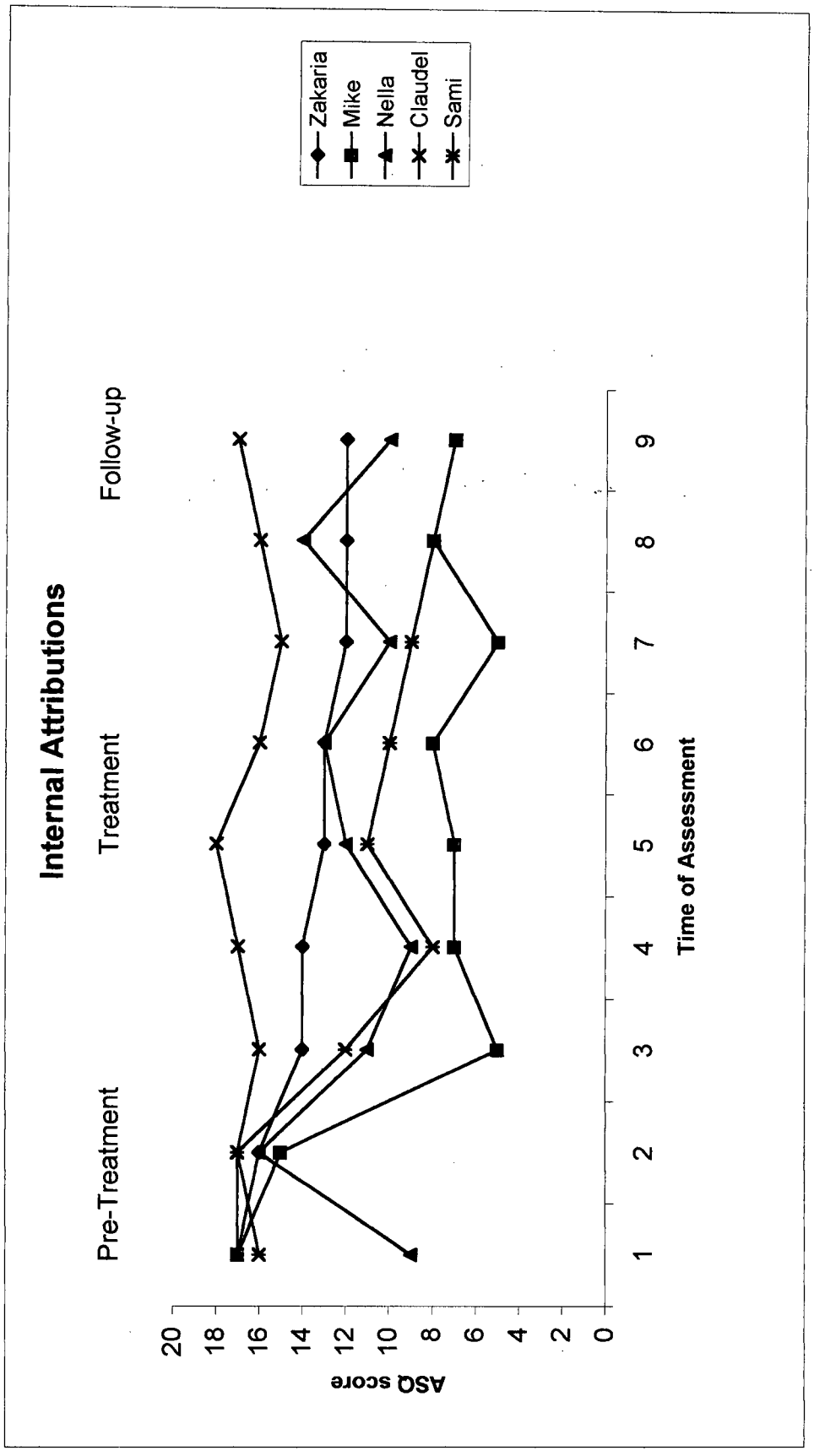

Figure 13. Individual participants' scores on the ASQ measured once during baseline, six times over the course of treatment, once at post-treatment, and once at 3-month follow-up.

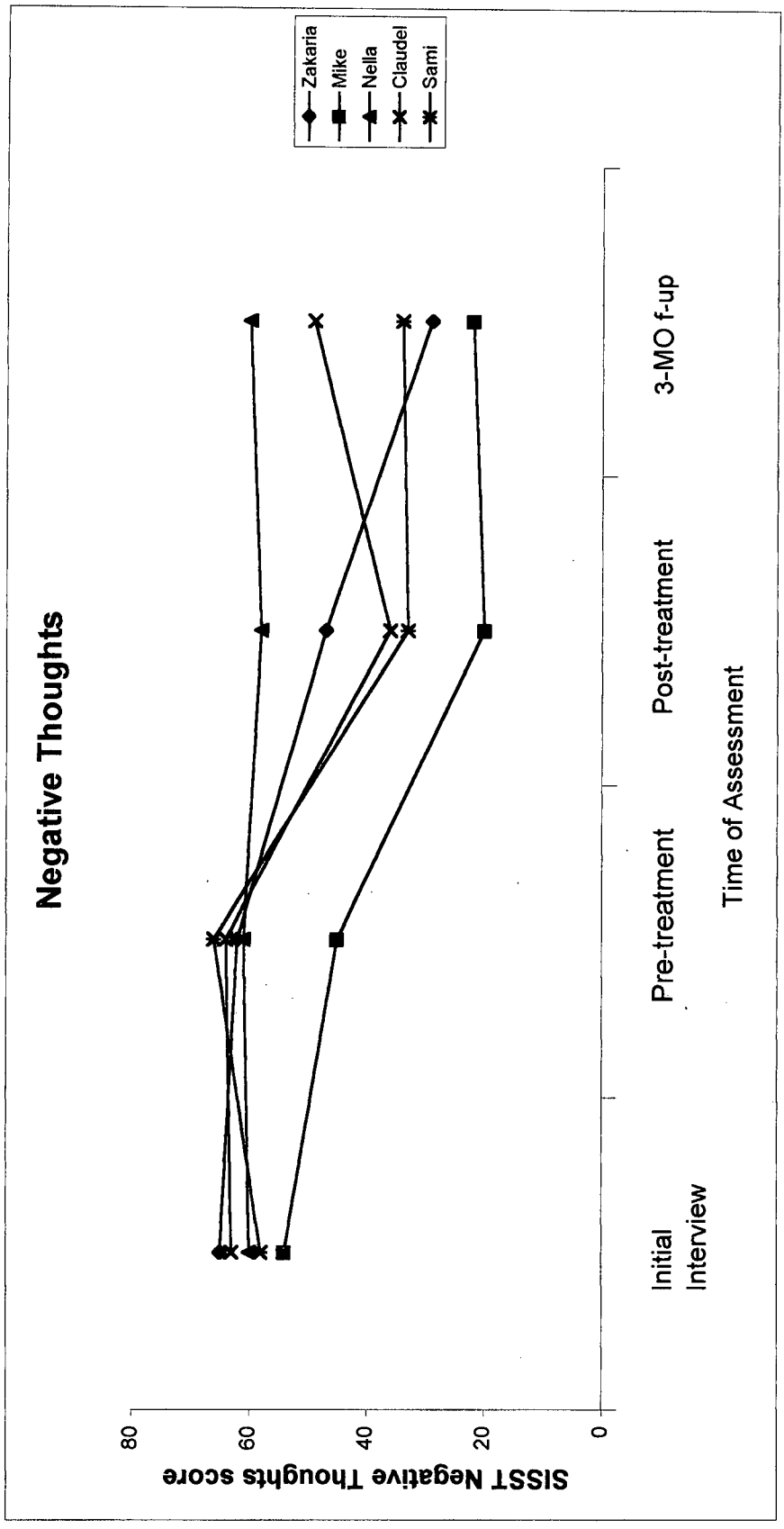

Figure 14. Individual participants' scores on the SISST Negative Thoughts scale during the speech task measured twice during baseline, once at post-treatment, and once at 3-month follow-up.

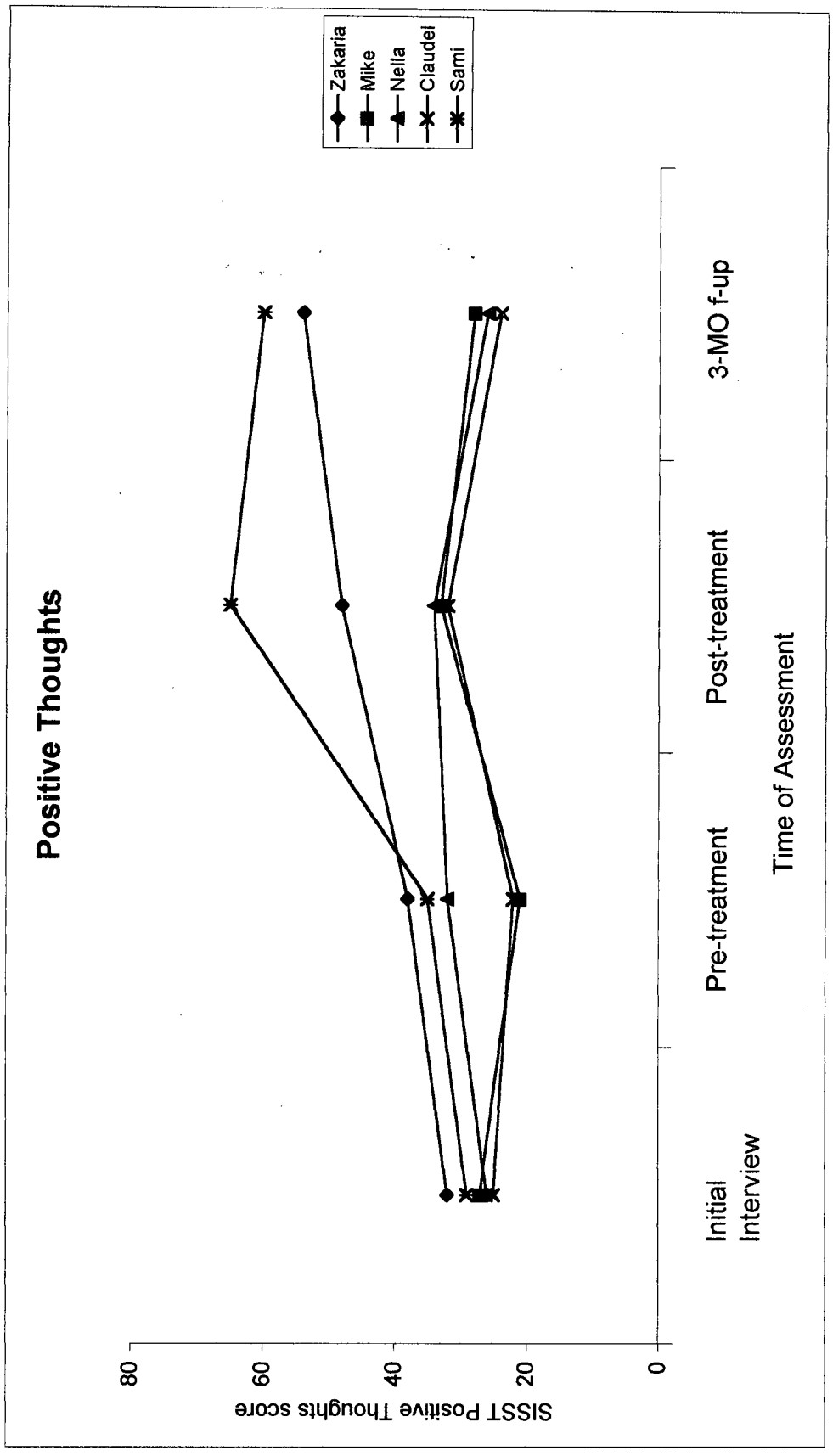

Figure 15. Individual participants' scores on the SISST Positive Thoughts scale during the speech task measured twice during baseline, once at post-treatment, and once at 3-month follow-up.

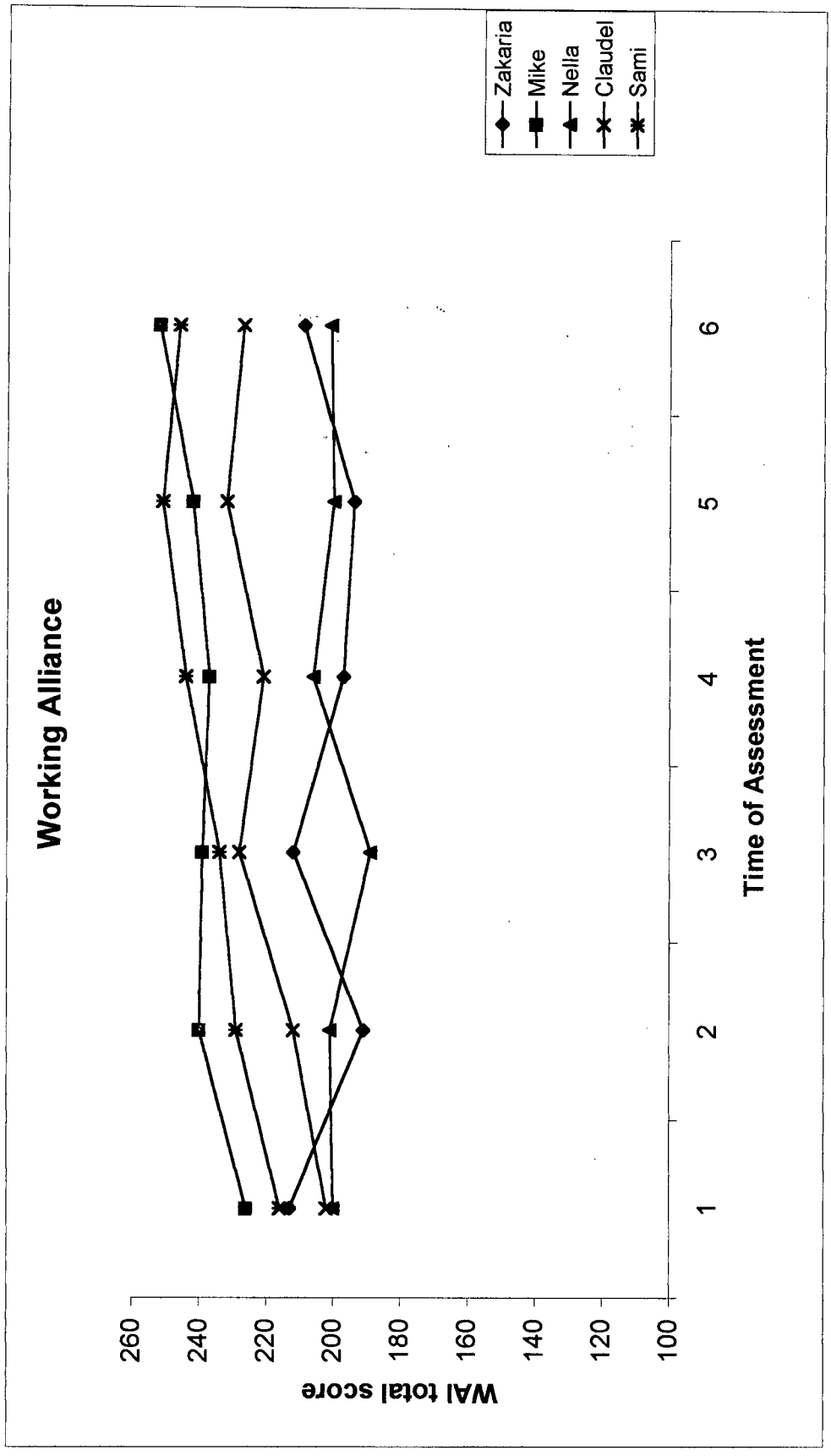

Figure 16. Individual participants' scores on the WAI measured six times over the course of treatment.

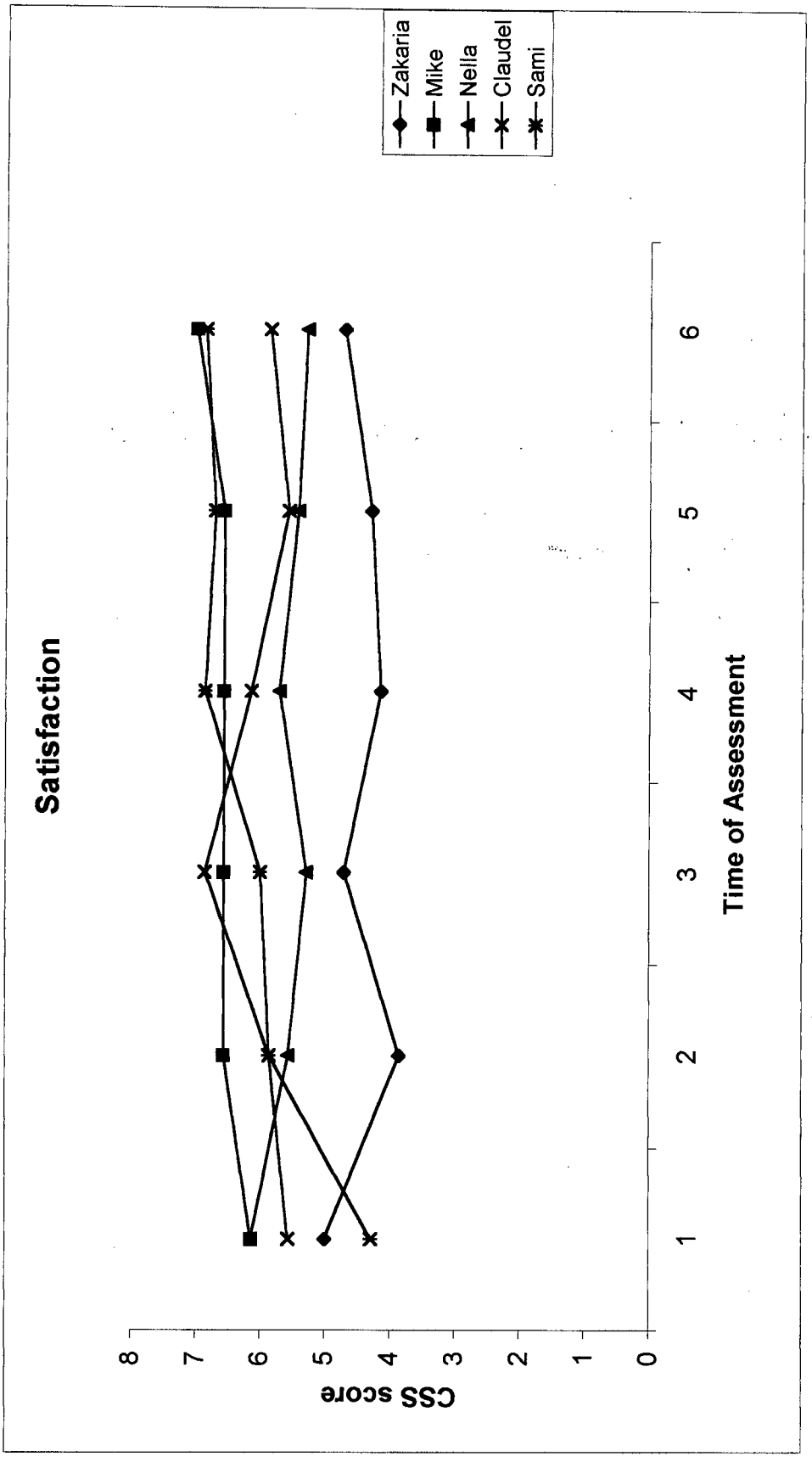

Figure 17. Individual participants' scores on the CSS measured six times over the course of treatment.

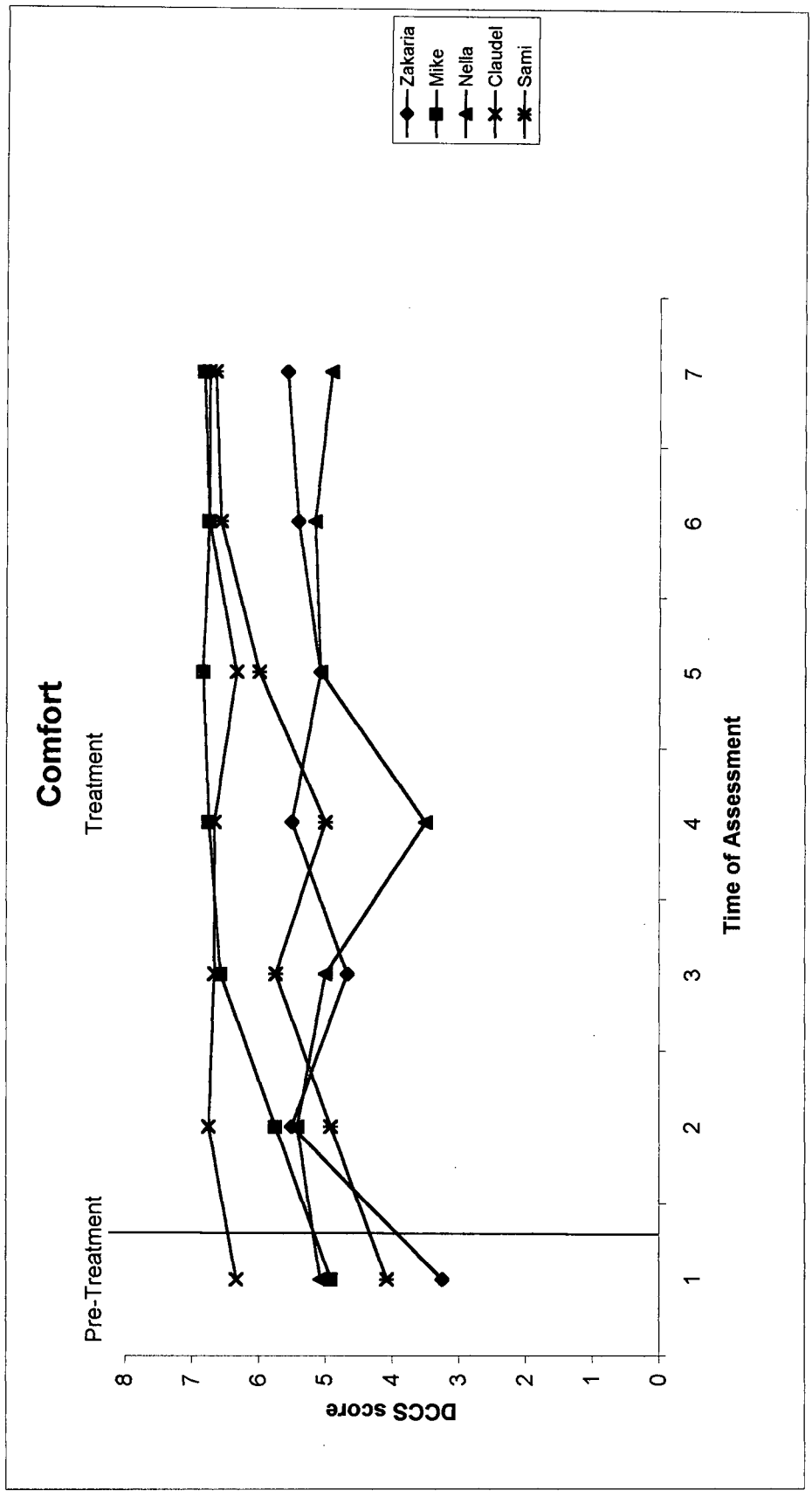

Figure 18. Individual participants' scores on the DCCS measured once at pre-treatment and six times over the course of treatment.

APPENDIX S

Responses to the Videoconferencing Post-Treatment Telephone Interview

Responses to the Videoconferencing Post-Treatment Telephone Interview

1. What were your goals for treatment?

Zakaria:	Better communication with other people, better presentation in front of other people.
Mike:	Reduce anxiety for public speaking
Nella:	Not to completely alleviate the problem, but to have some improvement with regards to feeling comfortable in situations. I didn't expect miracles.
Claudel:	To learn to deal with anxiety and hopefully become comfortable speaking in group situations.
Sami:	Deal with problems that were interfering with things I wanted to do, and have more confidence overall.

a) Did your goals change? If so, how and why?

Zakaria:	No.
Mike:	Yes. At beginning, I thought I could completely eliminate the problem; later, (it became) reducing to acceptable level.
Nella:	It was more involved than I thought. I expected less improvement since I realized what was involved.
Claudel:	My end goal has not changed but now I focus instead on using the tools instead of on the end goal.
Sami:	As I saw myself improving, I aimed higher, more leadership roles, changed my life.

2. To what extent do you feel you achieved these goals?

Zakaria:	30-40%, if I keep going with strategies from therapy, I expect to get to 70-80%.
Mike:	Completely successful. I got what I wanted. (Anxiety is) at a manageable level.
Nella:	I have tools now to use in difficult situations. It is still a big issue but I can look from at it from a different perspective. I still feel dread.
Claudel:	I think there has been an increase in confidence and an increase in my expectation that my end goal might be reached some day.
Sami:	Not much yet, but I feel I am on my way.

3. Do you feel that anything about the therapy situation hindered achieving your goals? If so, what, please explain.

Zakaria:	No.
Mike:	No.

Nella: I felt videoconferencing was cold, (but it is a) small factor. I might have opened more face-to-face. Regarding exposures: incremental was good, 3 months was too much, it could have been more gradual.
Claudel: No, I don't think so.
Sami: No, it only encouraged me.

4. What did you think was most effective about therapy? (what helped the most) What helped the least?

Zakaria: Most : I believe more in myself, I regained confidence, realized that my weakness in speaking English is not the worst thing in the world, that I can overcome this or have other jobs. This can't stop me from presenting myself.
Least: Self-monitoring not very helpful; presenting my ideas to others every week was unnatural; preparation was difficult for this.
Mike: Most : That I had to speak (not just theory), putting theory in practice.
Least: In the beginning, there was one homework that didn't seem useful – later it did (self-monitoring).
Nella: Most : Marie-Helene was wonderful, sensitive, sympathetic, the emphasis on the cognitive approach, self-talk was good.
Least: -
Claudel: Most : To redo actions that had occurred in real life where I had felt extremely uncomfortable. Redoing these actions made it evident that the situation was not such a big deal and not so scary after all. Redoing the actions and discussing this afterwards was most effective.
Least: -
Sami: Most: Approach, gradual. Educated me about the problem.
Least: Nothing.

5. Could you suggest ways the treatment could be improved?

Zakaria: More sessions, not just in one on one, main problem is improving English; more talk with English speakers, more difficult people.
Mike: More would be better.
Nella: -
Claudel: I think therapy could be improved by making it more intense (meet twice a week) and for a longer period of time (say 20 weeks instead of 12). This way, all possible situations could be acted out and repeated which I think would result in even greater confidence.
Sami: No.

6. Overall, how satisfied were you with the treatment on a 0-10 scale (0 = *not satisfied*; 10 = *very satisfied*)?

Zakaria: For now, 6.
Mike: 9 or 10.

Nella: Satisfaction with treatment: 9, due to Marie-Helene's integrity, involvement.
Outcome: 6, I expected I would improve more than I did.
Claudel: 9
Sami: 9

7. Have you had face-to-face therapy sessions before?

Zakaria: Three sessions with consultant at UBC for same problem (not useful at the time)
Mike: No.
Nella: Yes.
Claudel: Yes.
Sami: No.

If yes: How did the experience compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

Zakaria: Not different.
Mike: -
Nella: It was harder to open up and feel comfortable. Maybe no difference.
Claudel: I don't think videoconferencing makes a difference in terms of effectiveness in meeting goals. Similarly, satisfaction with treatment would be the same. The therapist seems more distant, but overall I think the situation is similar enough to face-to-face therapy.
Sami: -

If no: How do you think the experience may compare to a more typical face-to-face session in terms of effectiveness in meeting goals? in terms of satisfaction with treatment? in terms of relating to the therapist?

Zakaria: -
Mike: Videoconferencing made it easier to start. It was a baby step not to have a live audience. I was satisfied. (Relating to the therapist) was not a problem with videoconferencing.
Nella: -
Claudel: -
Sami: Very similar for effectiveness, similar for satisfaction and relating to the therapist. I forgot about the fact that it was on TV.

8. Did you experience any difficulties with the technology (a) picture, (b) sound, (c)feeling connected with the therapist, (d) meeting your needs.

Zakaria: Not that important, but some problems with the lag.

Mike: No. You quickly adapt to not speaking at the same time. Minor consideration.
Nella: Not really.
Claudel: No difficulties.
Sami: Once we got disconnected.

9. Do you think videoconferencing is a good idea? Why? Why not?

Zakaria: Why not? Helpful for me, helpful for others
Mike: Yes. Anxiety level isn't as high as at the beginning.
Nella: Yes. Especially for people who can't meet with a therapist face-to-face.
Claudel: Sure. It may be useful for situations where therapists can't be immediately present.
Sami: Yes. Especially for people who may not have access to face-to-face and for people with severe social anxiety.

10. What did you particularly like about using the technology?

Zakaria: Very amazing; liked it, felt comfortable, very useful
Mike: See above. Also, useful to see self on tape, even though its was uncomfortable.
Nella: More relaxing, in a way.
Claudel: It allowed me to see myself while I talked. That was very interesting.
Sami: Very real. Not like watching a video.

11. What did you dislike about using the technology, if anything?

Zakaria: Nothing.
Mike: Nothing.
Nella: Being in the room brings you closer to the person. You might not take it as seriously. It seemed a bit surreal, you could "act", feel "on stage" (and therefore act).
Claudel: It takes a little bit of the " realness" away, but not significantly.
Sami: No.

12. Would you recommend videoconferencing treatment for other individuals with the same problem?

Zakaria: Yes. For people with the same problem. If shyness was the problem, maybe it wouldn't be as good as face-to-face.
Mike: Yes.
Nella: Yes, if they couldn't have face-to-face of some quality. Face-to-face is better, more visceral.
Claudel: Yes.
Sami: Yes.

13. Do you have any additional comments about your experience with treatment via videoconferencing you would like us to know about in order to improve treatment for others?

Zakaria:	For cases like me, opportunities for more talking, more time to talk, more time to explain problems, it would have helped to talk to new people that I am not comfortable with yet.
Mike:	No.
Nella:	-
Claudel:	Just the intensity of treatment, which I already mentioned. I think greater intensity - more meetings, longer treatment - would ensure increased attention on the problem and solve more of it.
Sami:	No.